

Which firms do prefer Islamic debt? An analysis and evidence from global sukuk and bonds issuing firms

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Which Firms Do Prefer Islamic Debt?
An analysis and evidence from global sukuk and bonds issuing firms

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Abstract

The Islamic debt instrument sukuk has been in the market for two decades; still, we do not know why a firm prefers an Islamic debt over conventional debt, set aside religiosity issue. We argue there is a genuine reason to choose Islamic debt because it has lighter indebtedness, benefits of avoiding external monitoring, and tax incentives. Based on the cross-country data for 346 firms issuing dollar-denominated global sukuk and bonds, we find that firms that prefer Islamic debt and issue sukuk are financially more unstable, and thus exposing to higher insolvency risk as compared to bond issuing firms.

Key Words: Islamic debt, Sukuk, Bond, Insolvency risk, Debt market barrier.

1. Introduction

Sukuk, an Islamic debt alternative to the bond, has been in the global financial market for nearly two decades since it was first launched in Malaysia. Sukuk originally advents in response to Muslim investors' demands for financial assets that comply with the tenets of Islam (henceforth Shari'ah) such as interest forbiddance, asset backing of financial claims, and avoidance of investment in illicit sectors. According to the international Islamic financial market report (IIFM, 2018), sukuk is globally available in 29 countries with an outstanding value of USD 434 billion as of 2017 and average growth rate of 25.4% since 2001. The sukuk market traditionally dominates in Muslim countries particularly in Malaysia (55%), Saudi Arabia (14%), United Arab Emirates (7.9%), Indonesia (5.18%), Qatar (3.56%), Bahrain (5.3%), Pakistan (1.6%), Turkey (2.52%), Oman (1.4%) and Kuwait (3.8%). The size of sukuk market comprises about 28.5% of the total market debts (sukuk and bond) of these countries as of 2016 (The Gulf News, January 18, 2017). However, demand is also growing in non-Muslim countries like United Kingdom, United States, Singapore, Hong Kong, Luxembourg, South Africa among others. This is because global financial crisis pushes governments and corporations to diversify their funding options, and sukuk has been emerged as an alternative to conventional bond because of the non-speculative nature and ethical feature of the Islamic assets, according to CNBC report by Lee (2017).

The phenomenal growth of sukuk issuance motivates us to study why companies issue sukuk instead of a bond. This research issue arises because sukuk is neither a debt nor a corporate equity (Uddin, *et al.*, 2017; Securities Commission Malaysia, 2009, pp.21; Mohamed *et al.*, 2015; Godlewski, 2010). However, researchers usually consider it as a debt-like asset replicating bond equivalent cash flow but complying with Shari'ah principles of financial transactions (Trad and Bhuyan, 2015; Ahmed *et al.*, 2014; Alshamrani, 2014; Maurer, 2010). The existing literature is not adequate to know which firms prefer sukuk in lieu of bond in their corporate capital structure. The earlier studies involving Islamic borrowings by issuing sukuks focus mainly on the issues like information cost, market valuation of issuing firms, internal funds availability, issuers' financial constraints, and use of sukuk to achieve

target debt ratio of the firms (Nagano, 2017; Nagano, 2016; Nagano, 2010; Mohamed *et al.*, 2015; Klein & Weill, 2016; Grassa & Miniaoui, 2017). These studies mainly examine the determinants of sukuk issuance. However, their findings do not answer a fundamental research question: which firms would prefer sukuk instead of conventional bond to raise debt capitals from the financial markets - holding the Islamic religiosity issue as *ceteris paribus*.

There is one study by Minhat & Dzolkarnaini (2017) suggesting based on an initial evidence that Islamic financing does benefit less profitable firms since there is a ready demand from local Muslim clientele who want to invest in Islamic assets due to religious motive. However, it does not answer the question of why corporate firms offer foreign currency sukuks to global investors in the international market where a ready demand for Islamic assets does not exist. It means some firms have genuine reasons to choose sukuk instead of conventional bond because of differences in the underlying contractual arrangement for these two debt securities. In this paper, we first make efforts to provide a theoretical analysis to understand the reasons why a firm will prefer sukuk to bond when they need debt capitals followed by an empirical study based on the cross-country data of the firms that have issued dollar-denominated sukuks to global investors. This study is relevant for corporate financing decision in the countries where firms have a choice between the Islamic and conventional borrowing, but prior studies did not adequately address the question why some firms actively choose sukuk instead of a bond, particularly when they raise debts from the global markets. Also, it is not fully clear yet if the firms offering sukuk have different characteristics than those of the bond issuing firms.

The conceptual analysis shows that the issuing criteria for sukuk and bond might not vary significantly, but sukuk could be attractive to the firms with weaker performance. This is because there is no obligation for payment of fixed interest in partnership sukuks. Instead, the issuers share profit or loss from sukuk-financed business with the holders of sukuk, means there is a scope for passing through the losses to the sukuk holders. Hence, the question of default may not arise. In the case of non-partnership sukuk, issuers pay fixed coupons to the sukuk holder as lease rentals or credit purchase installments. However, the legal recourse to rentals or installments defaults is not unconditional but subject to the proofs of the sukuk issuer's negligence, fraud, bad management, and wrong business selection (Hassan, *et al.*, 2013, pp. 268; Securities Commission Malaysia, 2009, pp.226; Lewis, 2008). Hence, the default resolution process for non-partnership sukuk is more difficult than the bond defaults. Therefore, we conjecture that mostly the weak performing companies that have lower credit strength would issue sukuks. In contrast, the firms having a good credit rating and better financial performance is unlikely to issue sukuk because investors may be overpaid if there is a profit-sharing agreement between the issuer and sukuk holders. This is likely because a firm with high credit rating should not pay an extra risk premium. It is also unclear whether a financially sound firm would prefer a lease finance or installment purchase by issuing non-partnership sukuks because it is important to estimate the marginal benefits from the lease over buying, or installment purchases over cash buys. Therefore,

based on the theoretical analysis, we argue that the firms that are not able to perform well would find the sukuk to be more convenient than the bond to raise debt capital - possibly because they have difficulty to borrow from the conventional debt market due to the lower creditworthiness.

We implement the empirical study using a sample of 346 listed firms from 10 countries over 15 years period 2002 to 2016. Of these, a total of 61 companies issue sukuk and 285 issue bonds. Overall, the study finds that firms that use sukuk finance are valued lower and have weaker financial performance than the bond using firms. This finding is significant after controlling for firm characteristics, country variations, and time effects. We identify that weaker performance of the firms using Islamic debts persists across different countries, industries, size groups as well as in crisis and non-crisis periods. Also, the probability of using Islamic debt finance increases with the persistent deterioration of the both financial and market performance of a firm. We also find that firms using Islamic debt have higher insolvency risk in comparison to those using conventional debt. Therefore, it is likely that the weaker firms issue sukuk as an alternative to conventional bond to circumvent the barriers of the conventional debt market. However, the use of Islamic finance by issuing sukuk does not help a weaker performing firm to improve its performance.

This study has three main contributions to the body of literature in cross-disciplinary areas of corporate finance and Islamic finance. First, this study documents that weak performing and financially distressed firms issue sukuk to raise debt capitals and provide the empirical proofs from global data based on dollar-denominated corporate sukuk. Second, this study shows that Islamic finance has a broader application beyond the realm of religion as the sukuk market provides an alternative channel of debt finance that is convenient for financially distressed firms. Third, we contribute a new dimension to the studies on capital structure decisions involving debt and equity, because there is a new question of conventional debt or Islamic debt. On this point, our research suggests that financially distressed firms can get easy access to the capital market finance by switching from conventional to Islamic debt. However, these firms cannot improve their weak performance by using Islamic debt. Hence, our findings and analysis are consistent with the corporate finance theory: financing decision *per se* does not affect the operating performance, but inconsistent with Minhat & Dzol Karnaini (2017) who suggest Islamic financing benefits less profitable firms. The key implication of this study is that sukuk holders would need an additional risk premium because they practically invest in weak performing or financially distressed companies on the top of Sharia'h risk in Islamic investment (Mollah & Zaman, 2015; Azmat et al., 2014). The findings also imply that sukuk has the potential to take a position in the broader international markets despite its Islamic origin as it allows market access to distressed firms.

We organize rest of the paper in following sections: Section 2 provides the literature review and theoretical discussion on sukuk and bond. Section 3 describes test methods and data. Section 4 presents study results and provides discussions. Finally, the conclusion is given in the last section.

2. Literature Review and Theoretical Analysis

We first provide a literature review on the research question of this study. Next, we conceptually analyze how Islamic debt security (sukuk) differs from the conventional or pure debt instrument (bond) with regard to indebtedness consequences, market regulations, and tax implications for the firms. Finally, we develop the hypothesis of this study reflecting conceptual insights.

2.1. Literature review

The findings of Nagano (2010, 2016, and 2017) provide the preliminary idea of why firms issue sukuk. Firstly, firms issue sukuk instead of bank borrowing if they need a large amount of funds but have higher information asymmetry in the conventional debt market, suggesting the firms would issue sukuk to overcome the information asymmetry in debt market. However, the question is: do all firms have similar information asymmetry in the debt market? It is unlikely because the firms with lower credit strength have difficulty in getting access to the debt market. In this context, the evidence shows the credit rating has a negative correlation with the issuance of sukuk (Grassa & Miniaoui, 2017). Secondly, given the pecking order theory, Nagano (2017) finds that firms prefer sukuk instead of the bank loan or equity when the value of the firm is high. It puzzles us because Nagano (2017, pp. 151-152) finds that debt issuance also increases with the increase of firm value. It means the issuance of both sukuk and debt increases with the rise of firm value. Therefore, the underlying reason why a firm prefers Islamic to conventional debt is not clear. Thirdly, based on the KZ index (Kaplan & Zingales, 1997), Nagano reports that sukuk issuing firms have lower financial constraints as compared to the firms issuing debts. It also puzzles us because their finding implies: relatively distressed firms prefer conventional debt to sukuk, and their credit ratings should be lower than those of the sukuk issuing firms. However, the literature shows that sukuk issuing firms have lower credit ratings comparing to bond issuing firms (Grassa & Miniaoui, 2017). Nevertheless, these studies do not help us to understand the reason why a firm would prefer Islamic debt.

Another study by Minhat & Dzolkarnaini (2017) investigates to what extent the Islamic financing instruments are used by non-financial firms using financial data from 14 developing countries that have a non-negligible presence of Islamic banks. They find a negative relationship between the use of Islamic financing instruments (IFI) and firm profitability measured by earnings before interest, tax, depreciation, and amortization (EBITDA). Hence, authors suggest that IFIs are preferable to less profitable firms as the local Muslim clientele has ready demand for Islamic assets due to the religious motive. It perplexes us because corporate firms also issue foreign currency sukuks to the global markets where investors are less likely to have a religious motivation to invest in Islamic assets - suggesting other reasons for choosing sukuks by the issuers and investors. It is not clear if their study has used bank financing instruments or capital market instruments such as a corporate bond, stock, sukuk, etc. Based on their statement (developing countries that have non-negligible presence of Islamic banks, pp.

16), one can assume the study considers borrowing from the banks. If so, the literature suggests bank borrowing is theoretically different from the market borrowing by issuing financial instruments (Bolton & Freixas, 2000; Fiore & Uhlig 2011). Also, the profitability proxy (EBITDA) of their study does not reflect the effect of leverage and non-cash expenses, which is an essential matter in studying corporate financing decisions. Therefore, we cannot get a clear idea of why firms choose sukuk instead of bonds.

In the study using Malaysian data, Mohamed *et al.* (2015) find that firms using sukuk can achieve their target capital structure relatively faster than those using conventional bond. Authors attribute this finding to the sukuk issuers' privilege to tap capitals from Islamic funds that cannot be invested in Shari'ah non-compliant assets. This finding needs more careful analysis because we suspect there is a religiosity clientele issue here. If a firm wants to raise debt capital from Malaysian market, then perhaps sukuk is preferable due to the access of wider pool of investors (Muslims and non-Muslims). However, when Malaysian firms raise funds from international market by issuing sukuk then the religiosity clientele may not be a significant factor. Therefore, set aside the Muslim religiosity factor, why a firm prefers sukuk to bond is still unknown. Mohamed *et al.* (2015) also find that firms with lower profitability use conventional debt, which may be consistent with the pecking order and trade-off theories of capital structure. However, the study also finds that firms issue sukuks regardless of the profitability and internal funding availability, which means the pecking order and trade-off theories seem to be not holding for sukuk issuance. Therefore, from this result, we are unable to find an answer why debt issuing firms having lower profitability and inadequate internal funds are not switching to sukuk market.

In another Malaysian study, Klein & Weill (2016) argue that firms issue sukuk because of the information asymmetry between the issuers and investors due to the moral hazard and adverse selections. In sukuk market, the moral hazard problem occurs because firms can pass the least performing assets to the sukuk holders through Special Purpose Vehical (SPV), and adverse selection arises because the riskier firms may take the advantage of information asymetry. Their empirical results show that the likelihood of issuing sukuks is high when the firms have low earnings but high market value. This intriguing finding is not consistnt with the earlier study of Mohamed *et al.* (2015) who find that Malaysian firms issue sukuks regardless of their profitability but firms with lower profitability use conventional debt. The study of Klein & Weill (2016) is also not consistent with the later study by Nagano (2017) who find that sukuk issuing firms in Malaysia and Indonesia have lower financial constraints as compared to the firms issuing debts. Nonetheless, the findings of Klein & Weill (2016) may indicate religiosity sentiment in Malaysian market because Muslims prefer Islamic debts, and Shari'ah compaliants funds cannot invest in the conventional bonds.

As a whole, the earlier researchers examine the determinants of sukuk issuance, but we still do not know the main reason why a firm would use sukuk in place of bond when both funding options are available whilst holding the religiosity issue as *ceteris paribus*. This is important because the underlying

contractual mechanism of sukuk and bond are different; hence, the obligations and default consequences of Islamic and pure debts are also different. In the financial markets where both sukuk and bond are available, issuers might have an interest to issue sukuk as they can access the wider pool of capital from both from Muslim and non-Muslim investors. However, when firms issue sukuk to global the investors then the inherent characteristics of both sukuk and bonds are more important than mere religious matter. Hence, due to the paradigm shift in the debt contracts, we need to know the types of firms that may prefer using sukuk in lieu of bond. Therefore, we provide a theoretical analysis on the contractual differences, indebtedness consequences, regulatory and tax issues with regard to sukuk and bond.

2.2. Theoretical Analysis

2.2.1. An overview of sukuk and bond

Sukuk is a structured financial instrument first introduced by Malaysian securities authority in 2002. This new asset is aimed at Islamization of the conventional debt assets, means the contracts of sukuk produce bond-like cash flows for both the issuers and holders of the sukuk. We call it Islamization because sukuk contracts must satisfy Islamic jurisprudence known as Shari'ah¹ that prohibits fixed interest on debt, requires asset backing of financial transactions, and restricts investments in businesses involving alcohol, drugs, liquor business, pork, pornography, weapons, gambling, adult entertainments, and those subject to ethical questions (Securities Commission Malaysia, 2016, pp.43; Mollah and Zaman, 2015; ISRA, 2015, pp.177; Othman & Kamarudzaman, 2012; Afshar, 2013; Chong, & Liu, 2009; Ahmad & Hassan, 2007). The key difference between the conventional bond and sukuk lies in the design of contracts between the investors and issuer of the financial asset. The bond contracts create a lender-borrower relationship between the investors and issuer whilst the sukuk contracts involve either partnership or non-partnership business agreements. In partnership sukuk contracts (*mudarabah* or *musharakah*) investors and issuer of the asset share profits and losses from the sukuk financed business; whilst under the non-partnership contracts, there are two types of sukuk (*ijarah* and *murabaha*) that create either lessor-lessee or buyer-seller relationship between the investors and issuer of the asset (Uddin *et al.* 2017; Saad, Ibrahim, & Napiyah, 2016; ISRA, 2015, pp.202; Al-sayyed, 2010). The bond contracts could vary from the fixed to flexible interest payments and embed diverse types of contractual features² affecting the risk and return profile of the bond, but the legal relationship between the bond holders and issuer as lender and borrower does not alter. Likewise, sukuk also vary widely in terms of

¹ Shari'ah, the Islamic jurisdictions of complete code of life, derives from the Holy Book of *Al Quran*, the sayings of the prophet Mohammed (*Sunnah*), the consensus among Muslim scholars (*Ijma*) and analogy (*Qiyas*) (Alshamrani, 2014; Wahab *et al.*, 2014; Ayub, 2009, pp.41).

² For example, callable bonds, convertible bonds, inflation adjusted bonds, zero coupon bonds, sovereign bonds, and STRIPS.

their underlying agreements³, yet such variations in contracts do not create a legally recognized lender-borrower relationship between the sukuk holders and issuers.

Overall, the holders of sukuk irrespective of their types are the owners of the assets purchased by the issuer firm by using the funds collected by sukuk issue. Also, the cash flows to sukuk holders are to come from the incomes of sukuk underlying asset or business venture specified in sukuk indenture (DIFCSG, 2017; Meager, 2017; Ahmed *et al.* 2015; Ahmad & Hassan, 2007). To the contrary, all types of bonds constitute a lender-borrower relationship between the bondholder and issuer; and the issuer holds the proprietorship and risk exposure of the assets purchased by bond issuance. Hence, we argue that sukuk and bond irrespective of their types are characteristically different financial assets due to the differences in the underlying contracts: bond is a pure debt, but sukuk is like a synthetic debt.

2.2.2. Indebtedness consequences

We consider sukuk is a synthetic debt because the underlying contract does not formally recognize issuer's indebtedness to sukuk holders, but it practically creates financial obligations for the sukuk issuer. Therefore, Accounting and Auditing Organization for Islamic Financial Institution (AAOIFI, 2010) and The Islamic Financial Service Board (IFSB, 2009) recommend sukuk to be reported as liability in the corporate balance sheet. The key point here is that sukuk obligation is different from bond obligation on the question of indebtedness, because the indebtedness resulting from the bond being a pure debt has harsh consequence than that of the sukuk obligation. The creditworthiness and further borrowing power are significantly lower for the indebted firms and they need to pay higher interest on the borrowed funds. In case of the defaults in pure debts, the borrowers usually need to pay a penalty above the interest charge. However, there is no provision for default penalty system in Islamic finance, instead Shari'ah recommends sukuk issuers (Islamic borrowers) to donate an amount to charity in lieu of the penalty if payment default occurs (Bank Negara Malaysia, 2016; ISRA, 2015; pp.264). However, there is no clear guidance on the amount of such donation and its religious obligation. Since donation is not an obligation under the common law, the legal consequence is unknown if the defaulting borrower fails to give an amount to charity.

We also find another legal issue in determination of the sukuk holders' claims if the company is liquidated due to insolvency. This is because sukuk does not constitute a conventional lender-borrower relationship between the sukuk issuing firm and investors, and there is no legal frame work to determine sukuk holders' claims over the assets of liquidating company. This question arises since, in partnership sukuk contracts, the sukuk holders have shared-ownership with the firm on a particular business venture or project, implying that sukuk holders cannot claim anything from the other projects or assets of the

³ For example, Ijarah (lease contract), murabaha (sales contract), mudarabah (partnership contract), musharakah (joint venture contract), wakalah (agency contract), istisna (working capital management contract), salam (Islamic forward contract), and embedded sukuk (hybrid contract combining ijarah and options).

liquidating firm (Onder, 2016; Ahmad *et al.* 2015; Safari *et al.* 2013; Afshar, 2013). In non-partnership sukuk, the issuing firm either lease or hire-purchase assets from the sukuk holders for a limited span of time (Saad, Ibrahim & Napiiah, 2016; Ahmad and Rahim, 2013; Majid and Kamarudin, 2009; Lewis, 2008). Therefore, sukuk holders remain as the owners of these assets while the firm goes into liquidation before the expiration of sukuk contract. Hence, it transpires that sukuk holders have liquidation claims over the specific assets reported in the company balance sheet - but not on the total assets. The next question is whether the sukuk holders have priority claim on the specific assets of the liquidating company as mentioned above, because sukuk obligations are not pure debt like bond. Although the accounting regulations consider sukuk obligations as liability and recommend them to report in the balance sheet, the bankruptcy and insolvency laws of the sukuk issuing countries do not address if the sukuk holders' claims get priority over that of the equity holders. In a nutshell, sukuk holders' liquidation claims on the company assets is not yet well defined.

2.2.3. Regulatory issues

Let us now analyse the securities regulations that govern the issuance of bond and sukuk. This analysis is important because the regulations may influence the corporate decision to raise funds by issuing sukuk or bond. The review of securities regulations⁴ of different countries does not show significant variations in the regulatory requirements such as issuer's eligibility, credit rating, financial disclosures, and other general requirements for the issuance of sukuk or bond. We find that any public company irrespective of its listing on the exchange can issue bond or sukuk. The issue of bond or sukuk must be guaranteed by a bank or other relevant institution if the issuer is a non-listed firm. Although the nature of sukuk contracts are different from bond contracts, both securities are issued for a fixed maturity. This means sukuk is redeemable like bond at the maturity. We also find that issuers arrange independent credit rating before the issuance of both sukuk and bond. The rating agency mainly assesses the risk of investments in these two assets, implying that investors can predict their risk of investments in these two alternative assets. The sukuk issuer being a listed company is subject to same financial disclosure rules applying to the bond issuers. Therefore, investors ideally have no informational asymmetry if company issues sukuk or bond.

The issuance of bond and sukuk though is subject to same security regulations, but their trustee arrangements are not similar. In case of bond issuance, the issuing company hires an investment banker as trustee to manage implementation of the bond indenture by protecting the interests of both issuers and bond holders. Thereby, the conflict of interest between the firm shareholders and debtholders can be reduced (Bazzana, 2014). On the other hand, the sukuk issuing company creates a sperate legal entity called Special Purpose Vehicle (SPV) who issues sukuk certificates on behalf of the firm and oversees

⁴ We review relevant documents such as: Securities Commission Malaysia (2011), Moody's Investors Service (2017), ICMA (2016), National Bonds Corporation PJSC (2008), National Bank of Pakistan (2013), Mohammed (2014); Alshamrani (2014), Jobst *et al.* (2008) and Adam and Thomas (2004).

the implementation of sukuk indenture as trustee of the sukuk issue. Although, SPV has a separate legal entity, it is often a wholly-owned subsidiary of the company originating sukuk issuance - means the issuing firm is the *de facto* trustee of sukuk. Therefore, unlike bond issue, there is no practical third-party trustee arrangement in sukuk issue. In the absence of a practical third-party trustee system, the equity holders may expropriate wealth of the sukuk holders more easily and agency problem may exacerbate. We suspect this because the trustee supposed to monitor the issuer on behalf of the bond holders to make sure the issuer does not break obligations under the indenture (BondAdvisor, 2017). However, in sukuk, the issuing company being *de facto* trustee may prevent SPV from acting against its parent firm in the event of indenture breach. On the other hand, in case of bond, the issuer has less power to influence the third-party trustee to refrain from taking actions against indenture breach. This is because an investment banker or trust company may lose market reputation and future business if due diligence is absent in acting as trustee.

2.2.4. Tax issues

Let us review if there are tax implications for issuing sukuk or bond. We find that tax regulations across countries generally do not differentiate between Islamic and conventional debts. The corporations are subject to same taxation irrespective of the issuance of sukuk or bonds. Similarly, investors also are subject to same income tax regulations without regard to incomes from sukuk profits or bond interests. Although sukuk is not differentiated from bond for tax purposes, some countries like Malaysia provides incentives⁵ for issuing sukuk. For example, Malaysian tax law allows deduction on the expenditure related to sukuk issuance including those of SPV, exempts stamp duty on sukuk documentations and property gain taxes while disposing off sukuk underlying assets. Malaysian tax law also exempts tax on SPV income. In addition, tax on profits from ringgit dominated Islamic securities is exempted for foreign investors. Following Malaysian practice, Bahrain, Kuwait, UAE, Indonesia, and Turkey also embark on providing fiscal incentives to the issuers of sukuk. These incentives are given to provide tax neutrality to sukuk issuance with respect to bond issue. This is because sukuk contracts involve several underlying buying and selling of assets that involve asset transfer fees and taxes that need to be compensated. We provide a summary of tax issues related to sukuk and bond issuance in Appendix 1. As a whole, tax laws do not differentiate between Islamic and conventional debts, but fiscal incentives are given for sukuk in some countries in order to create a level playing field for both Islamic and conventional debts.

Finally, in the context of corporate financing theory, the use of Islamic debts (sukuk) *per se* being a financing decision should not affect the operating performance of the firms in an ideal circumstance since the corporate financing choice have no relevance for the corporate investment decisions.

⁵ The details of special tax incentives for Malaysian sukuk issuers are available at <https://www.sc.com.my/special-incentives-islamic-capital-market>.

However, the underlying contractual structure of sukuk, as opposed to the conventional bonds, allows the financially weaker corporate entities to get an easy access to debt market. Therefore, the weaker firms will preferably choose sukuk instead of bond for their debt finance.

2.3. Hypothesis development

The analyses on contractual arrangements, regulations, and taxes with regard to sukuk and bond presented above show that (i) indebtedness consequences of Islamic debts is not yet clear but is likely to be less harsh than that of conventional debts, (ii) the third-party trustee monitoring of the implementation of sukuk indenture is absent, (iii) tax regulations generally do not differentiate Islamic or conventional debts with regard to taxations but there is a growing tendency of providing fiscal incentives to compensate for the additional costs of issuing sukuk. We argue that these issues could have implications for corporate financing decision by issuing sukuk or bond being they are alternative debt instruments.

First, indebtedness is a concern of the firm with lower debt servicing ability due to the higher likelihood of bankruptcy and liquidation. The firm has low debt servicing capacity if it has difficulty in generating cash flow (Altman, 1968), due to the weaker earning capacity (Bognárová, 2016; Fernendaz, 2006; Amuzu, 2010). Therefore, the poorly performing firms might prefer raising funds by issuing sukuk instead of bond, because sukuk has less severe default consequences in comparison to bond defaults. However, the lighter indebtedness consequence of sukuk is less critical for a strongly performing firm due to its higher debt-servicing ability in contrast to that of a weaker firm. Moreover, in the competitive debt market, a stronger firm may distinguish itself from the weaker firms by choosing conventional bond instead of sukuk despite that both forms of debt financing are available. It is because the issuance of sukuk by a well-performed firm may give a negative signal to the market as it should not have issues with timely loan servicing. Evidence also shows that sukuk is a riskier asset than a bond due to the different contractual mechanism (Alswaidan, 2017; Fathurahman and Fitriati, 2013; Abedifar *et al.* 2013; Krasicka and Nowak, 2012; and Ahmad and Radzi, 2011), and Shari'ah risk⁶. Hence, sukuk investors would need an additional risk premium for the higher risk profile of the asset (Sharpe, 1964; Linter, 1965; Mossin, 1966; and Black, 1972). It implies that, by issuing sukuk, a well-performing firm would unnecessarily pay a premium despite that it has less chance to default.

Second, in the absence of third-party monitoring, a sukuk issuer may find it comfortable to deal with SPV – a whole-owned subsidiary. It is because a sukuk issuing firm being the *de facto* trustee for its

⁶ Islamic finance products must comply with Shari'ah guidelines about financial transactions. However, these guidelines are not yet standardized globally because of different Islamic schools of thought that govern the practice of Islamic religion. Moreover, Shari'ah scholars revise guidelines due to changes in the real-life circumstances. Therefore, it is likely that an Islamic product could be permissible in one school of thought but not in other schools. It also likely that an Islamic product is permissible today but may appear otherwise later. Details about the Shari'ah risk can be found at Malkawi (2014), Uddin *et al.* (2017), and also at : <https://www.ft.com/content/05913b66-6709-11e7-9a66-93fb352ba1fe>.

sukuk can retain an indirect control over the escrow deposits and sinking funds as well as save the external trustee fees. Besides, sukuk issuer may find it easy to work with wholly-owned SPV for the disclosure of sensitive information because a subsidiary entity might be reluctant to disclose negative news of the parent. Further, the SPV may not be very prompt if the sukuk issuer breaches any of the covenants as their interests are not different from each other. In a nutshell, the sukuk issuer controls the SPV even though they are separate entities technically. Thereby, a sukuk issuer can avoid indenture and covenants monitoring by the third-party. Hence, we assume that a poorly performing firm might prefer self-monitoring (via SPV) instead of external monitoring of the third-party trustee to overcome the stringent debt market regulations. However, indenture monitoring by an independent trustee is not an issue for the well-performing firm because the probability of indenture breach is likely to be lower than that of the poorly performing firm. Also, a stronger firm could find the self-monitoring of indenture to be counterproductive because it would affect firm credibility in the competitive market. Hence, a strongly performing firm may wish to distinguish itself from a weaker firm by choosing conventional bond instead of sukuk.

Third, the fiscal incentives in many countries promote competitive markets for the sukuk issuers because they can recover the additional costs of sukuk issuance from the fiscal incentives. However, there is no arbitrage benefit as the incentives allow a firm to recover the extra costs of sukuk issuance only. It generally implies that firms will not switch from conventional debt to Islamic debt for fiscal incentives *per se*. Nevertheless, the poorly performing firms will get an edge when they consider issuing sukuk for indebtedness consequence and avoidance of external monitoring.

Finally, set aside the religious motive to tap Muslim investment clienteles, the above analysis shows that a weaker firm would find sukuk issuance is a convenient way to access to the debt market as it can easily overcome the unpleasant consequence of payment defaults, retain the control over the indenture implementation, and recover the additional costs of sukuk issuance. On the other hand, in the competitive debt markets, a stronger firm can distinguish itself from a weaker firm by choosing conventional bond instead of sukuk when both forms of debt financing are available. Therefore, we construct the hypothesis as follows:

The firms with weaker performance are likely to prefer sukuks instead of conventional bonds when both options of debt financing are available.

3. Method and Data

We undertake the main empirical tests in two stages. The first stage tests examine the performance of sukuk issuing firms as opposed to their bond issuing counterparts based on the system generalized method of moments (GMM) regression estimates determining the direction and the level of significance of the partial correlation coefficient between the firm performance and firm identity as Islamic debt user (sukuk issuer). The second stage tests determine the probability of weaker firms to issue sukuk based

on the probabilistic models, which will validate the hypothesis of this study. Finally, we robust check if the sukuk issuing companies being the weaker firms have higher insolvency risk than bond issuing firms based on the system GMM.

3.1 Dependent variables

In the first stage, we examine two categories of firm performances, such as market value performance and corporate financial performance. We measure market value performance by *Tobin's Q* and *price-earnings ratio*. *Tobin's Q* is calculated as the market value of the equity plus the book value of debts divided by the book value of total assets whilst *price-earnings ratio* is calculated as the market price per share divided by earnings per share. We use *return on assets*, *return on equity* and *earnings per share* as the measures of corporate financial performance. The *return on assets* is calculated as the net income divided by total assets, *return on equity* is calculated as the net income divided by total equity and *earnings per share* is calculated by net earnings divided by the total outstanding shares. In the second stage test, we estimate the probability of issuing sukuk so $Prob(Sukuk_{it} = 1|X_{it})$ is the dependent variable; in which, $Sukuk_{it} = 1$ if the sample firm is sukuk issuer otherwise 0.

3.2 Independent variables

3.2.1 Testing market and corporate financial performance

To examine the market and corporate performance of sukuk issuing firms in comparison to that of the bond issuing firms, we specify a dummy independent variable $sukuk = 1$ if the study observation is for a sukuk issuing firm, and otherwise 0. We also specify an array of *sukuk* dummies for empirically testing the consistency of results across the sukuk issuing country, industry sector, firm size, and financial crisis period. For example, $Sukuk*Country_i = 1$ if the observation belongs to the sukuk issuing firm of the country i ; we have 10 *sukuk*country* dummies in this test. Likewise, $Sukuk*Industry_i = 1$ if the observation belongs to the sukuk issuing firm of the industry i . We specify a total of 10 *Sukuk*Industry_i* dummies. $Sukuk*Size_i = 1$ if the observation is from the size group i . We classify all sukuk issuing firms into three size groups: large, medium, and small. The large sukuk firms are those that with total assets above the 75th percentile of all sukuk issuing firms. The small sukuk firms are those with total asset below the 25th percentile and the medium sukuk firms are those between the 25th and the 75th percentiles. Finally, $Sukuk*Crisis_i = 1$ if the observation of sukuk issuing firm is for the period global financial crisis period (2007-2009), otherwise 0.

3.2.2 Testing probability of weaker firms to issue sukuk

We run a total of five instrumental variable probit (IVPROBIT) models to estimate the probability of weaker firms issuing sukuk, using two measures of market-based performance and three measures of corporate performance as defined above. Models 1 and 2 respectively uses *Tobin's Q*, and *price-earnings ratio* as the market-based explanatory variables whilst Models 3 through 5 respectively uses

return on assets, *return on equity* and *earnings per share* as the corporate performance measures. Since these variables are dependant variables in the previous tests, we assume reverse causality could be an issue in these probit regressions due to endogeneity problem. Therefore, we use *leverage* (debt-to-equity ratio) as the instrumental variable in these five ivprobit regressions; so that models capture the exogenous effect of market and corporate performance measures on the probability of weaker firms issuing sukuk. We consider *leverage* is an appropriate instrument in the context of our study because average *leverage* of the sukuk issuing firms is not significantly different from that of the bond issuing firm, and tests also find that *leverage* has no effect on the dependant variable [$Prob(Sukuk_{it} = 1|X_{it})$] of Model 1 through 5. However, *leverage* has a significant effect on the performance variables: *Tobin's Q*, *price-earnings ratio*, *return on assets*, *return on equity* and *earnings per share* of the firms. The univariate effect of *leverage* on these performance variables is high enough (F value ranges between 10.89 to 155.10) to use it as a good instrument in our probit regressions.

3.2.3 Control variables

We identify several firm and country level control variables for this study based on literature. The firm-level controls include market capitalization of firm (*size*), total debt to total equity (*leverage*), time span between the incorporation of firm and the last day of sample period (*age*), net income to total asset (*return on asset*), net income to total equity (*return on equity*), net income divided by total shares outstanding (*earnings per share*), net cash flow divided by total share outstanding (*cash flow per share*), total sales to total assets (*asset turnover*), net income to total revenue (*profit margin*), and total operating costs to total revenue (*cost to revenue*). The country-level controls include the natural log of the gross domestic product per capita of issuing country (*GDP_per cap*), the annual rate of inflation of issuing country (*inflation*), the corruption rate of issuing country (*Corruption*), the percentage of Muslim population in the sample country (*Muslim*). Finally, by following Boubakri *et. al.* (2013), we add three sets of dummies such as *year*, *country*, and *industry* to capture the unknown fixed effects. In which, *year* and *country* dummies directly control for the time and country fixed effects while the *industry* dummies capture the time-invariant fixed effect of the firms since the industry affiliation of firms usually remains fixed. Let us now discuss the firm- and country-level control variables in testing the performance of firms and probability of weaker firms issuing sukuk.

In the regressions that examine market performance, we apply *size*, *leverage*, *age*, *return on asset*, *return on equity*, *earnings per share*, and *cash flow per share* as firm-level controls. On the other hand, we use *size*, *leverage*, *age*, *asset turnover*, *profit margin*, and *cost to revenue* as firm level controls in the models examining the financial performance of firms. The effect of firm *size* on the market and financial performance is well established in literature (Kim *et al.* 2016; Canback *et al.* 2006; Ramasamy *et al.* 2005; and Banz 1981). The earlier studies find that *leverage* can adversely affect firm performance (Vithessonthi and Tongurai, 2015; González, 2013; Ghosh, 2008; Opler and Titman, 1994), because market and financial performance generally decline with the increase in financial leverage due to

financial distress effect. Researchers find that *age* of the firm in same business negatively affect its performance (Pervan *et al.*, 2017; Loderer and Waelchli, 2010; Majumdar, 1997), because of business saturation and market competition. Since corporate financial results determine the value of firm, we use the *return on asset*, *return on equity*, *earnings per share*, and *cash flow per share* as the firm-level controls in the models testing for market performance. It is understandable that a firm has higher turnover and more net income for every dollar of revenue if it manages the assets, costs, and earnings more efficiently. Hence, we add *asset turnover*, *profit margin*, and *cost to revenue* as firm-level controls for financial performance.

In addition, we include *GDP_per cap*, *inflation*, *Muslim*, *corruption* as country-level control variables in all test models across Model 1 through 5 of testing corporate performance. It is documented that firm performance in emerging and developed countries varies due to business competitiveness environment (Goldszmidt *et al.*, 2011; Seifert and Gonenc, 2018). Therefore, *GDP_per cap* captures the effect of the level of economic development of country. Prior studies find that inflation affects economic growth of a country (Chu *et al.*, 2017; Eggoh and Khan, 2017) due to its effect on the production costs and purchasing power. The concentration (%) of Muslim population determines the level of religiosity in the country that might affect the performance of firms due to the conflicts between the religiosity sentiments and effective corporate governance (Nakpodia *et al.*, 2017). Therefore, *Muslim* dummy captures religiosity effect on performance of firms. The prior studies find that corruption negatively influences the sales growth and efficiency of firms (Kim *et al.*, 2017; Ayaydin & Hayaloglu, 2014), and thereby affect the corporate performance.

Next, in testing probability of weaker firms issuing sukuk, we apply *size* and *age* as firm-level control variables. Evidence shows sukuk are usually issued to fund the large projects (Shahida and Sapiyi, 2013); so, there is a likelihood that sukuk issuing firms are generally bigger than bond issuers. We assume that sukuk issuing firms are relatively younger than the bond issuers. Sukuk provides the opportunity of corporate fund raising for the indebted firms- which is more important for the younger firms; because younger firms require more corporate capital for business expansion than that of matured firms. We also add same country level control variables such as *GDP_per cap*, *inflation*, *Muslim*, *corruption* as country-level control variables in all models 1 through 5 of testing probability of weaker firms issuing sukuk.

3.4 Sample and data

We search Thomson Reuters database to construct our study sample. First, we download the list of outstanding dollar-denominated corporate sukuk as of 2017; then we identify the name of the issuing firm for each sukuk and the country of firm incorporation. We find a total 69 firms have issued dollar-denominated corporate sukuk. These sukuk issuing firms belong to Bahrain, Egypt, Kuwait, Malaysia, Oman, Pakistan, Qatar, Saudi Arabia, Turkey, and UAE. Next, we download the list of dollar-

denominated corporate bonds belonging to these 10 countries and then identify the names of bond issuers. We identify that a total of 326 firms have issued dollar bonds. Therefore, the sample consists of 395 firms belonging to above 10 countries and listed on the home-country exchanges; of these, 69 are sukuk issuers and 326 bond issuers. We extract market and corporate financial performance data of these firms over 15 years from 2002 to 2016. However, we exclude eight sukuk issuing firms and 41 bond issuing firms because the essential test data are not available. Therefore, the study sample is reduced to 346 firms where 61 are sukuk issuers and 285 are bond issuers. We believe the sample is appropriate for this study because we intend to examine the research issue in a cross-country setting. This is because selection of the firms issuing dollar-denominated global sukuk and bonds provide a homogeneous group of samples belonging to different countries.

[Insert Table 1 Here]

The details of sample distribution across different countries and industries are presented in Table 1. Panel A of this table shows that a total of 37 (61%) global sukuk issuing firms out of 61 belong to three countries such as Malaysia, Kuwait, and the UAE while remaining 24 sukuk issuers (39%) belong to seven countries. Overall, Malaysia is the leading country with 15 firms issuing dollar-denominated global sukuk followed by Kuwait and the UAE. Panel A also shows that, in comparison to sukuk issuers, the bond issuers are roughly evenly distributed among 10 countries, in which the maximum 52 (18.24%) global bond issuers belong to Malaysia while the minimum 19 (6.67%) belong to Bahrain. Overall, among 10 countries, Malaysia stands at the forefront of issuing both sukuk and bonds in the global debt market. The industry distribution of the sample firms presented in Panel B shows that 40 (65.57%) sukuk issuing firms belong to three industries such as banking, trade-service, and property. In which, banking is the leading sector that has 22 (36%) sukuk issuing firms, followed by trade-service and property sectors that have 11 (18%) and 7 (11.4%) firms respectively. Panel B also shows that, in comparison to sukuk issuers, the bond issuers are roughly evenly distributed among 10 industries, except plantation and construction. The reason is that only 9 (3.16%) bond issuing firms belong to these two industry sectors, in which particularly plantation has 7 (2.45%) bond issuing firms whilst construction has the minimum 2 (0.71%) bond issuing firms. The remaining 276 (96.84%) bond issuing firms belong to the rest eight industries, in which banking is the pioneer sector having 49 (17.2%) bond issuing firms.

The sample of sukuk issuing firms is overall relatively small considering the coverage of the countries and industries, as 17.63% (61/346) of sample firms use sukuk while the majority (82.37%) use bonds to raise debt capital from the international market. Therefore, we increase observations by collecting data for 16 years. In this way, we gather a total of 4417 maximum clean observations including 811 observations for the sukuk firms. To maintain the precision of results, we run tests on the full data while taking sukuk firms as a dummy variable. However, the selection of firms issuing dollar-denominated securities (sukuk or bond) has an essential role in empirical tests with controlling

religiosity motive of the issuers and investors. It is because, in the local market, sukuk issuers have an investor clientele with religious feeling in favor of Islamic assets, but the global investors would instead consider the merits of sukuk in comparison to bonds. On the other hand, the bond issuers in local markets might have difficulty to attract Muslim clientele due to their religious motive. Hence, firms issuing sukuk or bond to the global investors are appropriate samples for this study.

Next, we process the test data after adjusting outliers and report descriptive statistics in Table 2. From the dependent variable statistics, we find that *Tobin's Q* varies from 0.0005 to 14.42 with an average value of 0.75 for all firms but the average *Tobin's Q* of sukuk issuing firms (0.504) is significantly lower than that of the bond issuing firms (0.808). *Price earnings ratio* varies from 0.15 to 875.9 with an average of 23.39 for all firms while the average *price earnings ratio* of sukuk issuing firm (22.98) is insignificantly lower than that of bond issuing firms (23.49). *Return on asset* differs from negative 2.28 to 0.72 with an average of 0.043 for all firms but the average *return on asset* of sukuk issuing firm (0.024) is significantly lower than that of bond issuing firms (0.047). *Return on equity* fluctuates from negative 115 to 28.06 with an average of 0.08 for all firms but the average *return on equity* of sukuk issuing firm (0.019) is lower than that of bond issuing firms (0.095). *Earnings per share* varies from negative 54 to 35.16 with an average of 0.25 for all firms but the average *earning per share* of sukuk issuing firm (0.203) is significantly lower than that of bond issuing firms (0.267).

[Insert Table 2 Here]

The statistics for firm level control variables show that the log of total asset (*size*) varies from 0.01 to 5.53 with an average of 2.55. *Leverage* differs from negative 5.43 to 13.17 with an average of 0.79. *Age* ranges from 3 to 190 years with an average of 34.91. *Free cash flow* fluctuates from negative 53 to 26.8 with an average of .0043. *Asset turnover* varies from negative 0.23 to 88.17 with an average of 0.73. *Profit margin* ranges between negative 606 to 271.3 with an average of negative 0.024. *Cost to revenue* varies from negative 153.4 to 501.4 with an average of 1.18. From the statistics for country-level variables presented in Table 2, we find that the log of *GDP_per cap* ranges from 2.69 to 4.94 with an average of 4.10. The *inflation rate* fluctuates from negative 4.86 percent to 44.9 percent with an average of 4.72 percent. The *corruption* indices for sample countries vary from 0.45 to 9.76 with an average of 3.51 out of 10. The *Muslim* population in these countries varies from 61 percent to 99 percent with an average of 82.7 percent for all countries.

4. Results and Discussions

We execute empirical tests to examine if the firms with weaker performance are likely to issue sukuk instead of conventional bonds and present results in this section. First, we present the findings on comparative performance of both sukuk and bond issuing firms based on the system GMM estimates. Next, we present the probit model findings on the probability of weaker firms to issue sukuk. Finally, we provide a discussion to reflect on the academic and practical implications of the study findings.

4.1. Comparative performance of sukuk and bond issuing firms

4.1.1. Univariate regressions

The univariate GMM estimates reported in Table 3 below show that the coefficient of *sukuk* dummy is negative for both the market and corporate financial performance measures. For the market performance measures, the *sukuk* dummy is statistically significant at one percent level for *Tobin's Q* (Model-1) but it is not significant for the *price earnings* variable (Model-2). For corporate financial performance measures, the *sukuk* dummy is significant at one percent level for *return on asset* (Model-3) whilst that for the *return on equity* (Model-4) and *earnings per share* (Model-5) are insignificant. The coefficient of *sukuk* dummy in Model-1 shows that the market valuation of the assets of sukuk issuing firms (measured by *Tobin's Q*) is about 39 percent lower than that of the bond issuing firms. Similarly, the coefficient of *sukuk* dummy in Model-3 shows that the return on assets of sukuk issuing firms is about 2.9 percent lower than that of bond issuing firms. These two results provide initial support to our hypothesis that sukuk issuing firms are weaker than their bond issuing counterparts in terms of both market valuation of assets and earning capacity.

[Insert Table 3 Here]

4.1.2. Multiple regressions findings

Next, we examine the performance of sukuk issuing firms as compared to that of the bond issuing firms after controlling the observable and unobservable firm and country characteristics as well the *year*, *country* and *industry* effect. The findings in Table 4 show that the GMM coefficients of *sukuk* dummy are significantly negative for all the measures of market and corporate financial performances as tested by models 1 through 5. Of these, the results of models 1 and 2 reveal that market valuation of the sukuk issuing firms in terms of both *Tobin's Q* and *price earnings* ratio is lower than that of the bond issuing firms at less than one percent level of significance. Among the control variables, all are statistically significant except *age* and *cash flow per share*. The results of Models 3 through 5 show that the corporate financial performance of sukuk firms measured in terms of the *return on asset* and *earning per share* is weaker than the bond firms at less than the one percent level. The financial performance of sukuk firms measured based on the *return on equity* is also lower than that of the bond firms at the five percent level. The control variables of these three models are also mostly significant, except *inflation*. However, *age* is significant only for Model 4. As a whole, all test models (1 through 5) are correctly specified as all F values are significant at less than the one percent level. However, Model 1 that examines firm valuation in terms of *Tobin's Q* and Model 3 that examines corporate financial performance in term of *return on assets* have more explanatory power than other models. All in all, the multiple regression results in Table 4 confirm the univariate results in Table 3 that the sukuk issuing firms are weaker than the bond issuing firms with regard to their market valuation and corporate financial performance.

[Insert Table 4 Here]

Subsample analysis:

We undertake subsample analysis on different dimensions to check if results sustain similarly across different countries, industrial sectors, size groups, and economic crisis periods. The coefficients of the country-wise *sukuk* dummies presented in Panel-A of Table 5 show that the market valuation of the *sukuk* issuing firms in terms of *Tobin's Q* (Model-1) is lower than that of the bond issuing firms across 10 countries, but the difference is insignificant for Kuwait, Pakistan, Qatar, and Saudi Arabia. The *price earnings* results of Model-2 also show that the earnings of *sukuk* issuing firms are valued lower than that of the bond issuing firms in six countries such as Malaysia, Oman, Pakistan, Turkey, Qatar and Saudi Arabia though the valuation difference is insignificant in Qatar and Saudi Arabia. In consistent with the market valuation results, the corporate financial performances of the *sukuk* firms are generally weaker than the bond firms across all countries. We find that *return on assets* of *sukuk* firms are significantly lower than that of bond firms in all countries except Bahrain and Qatar. Likewise earning per share of *sukuk* firms are significantly lower in all countries except Qatar, Oman, and Egypt. However, the *return on equity* of *sukuk* firms is significantly lower only in three countries such the UAE, Pakistan, and Egypt. Therefore, based on the cross-country results of Models 1 through 5 in Panel A of Table 5 we confirm that both the market valuation and corporate financial performance of the *sukuk* issuing firms are significantly lower than the bond issuing firms. The market valuation results indicate that *sukuk* firms across countries have lower growth potential and higher risk than bond firms while corporate financial results imply that *sukuk* firms have less earning per dollar of asset than that of the bond firms.

[Insert Table 5 Here]

Next, Panel B of Table 5 presents us a comparison between the performance of *sukuk* and bond issuing firms to check if the empirical findings sustain similarly across different industry areas. We identify that the market valuation of the *sukuk* issuing firms in terms of *Tobin's Q* (Model-1) is lower than that of the bond issuing firms across 10 industry sectors, but the difference is insignificant for trade-service, technology, mining and plantation. The *price earnings* results of Model-2 also show that the earnings of *sukuk* issuing firms are valued lower than that of the bond issuing firms in five industries such as construction, consumer product, finance, property, and plantation though the valuation difference is insignificant in construction, consumer product. In concomitant with the market valuation findings, the corporate financial performances of the *sukuk* firms are also generally weaker than the bond firms across all industries. We find that *return on asset* (Model-3) is lower than that of the bond issuing firms across 10 industry sectors, but the difference is insignificant for mining, industrial product, property and plantation. Likewise *earning per share* (Model 5) of *sukuk* firms are lower in all industries except mining industry. However, the *return on equity* (Model 4) of *sukuk* firms is significantly lower

than bond firm only in the mining industry. For other industries the *return on equity* of sukuk firms are also lower than bond firms but the difference is not significant. As a whole, the results in Panel B of Table 5 show that the weaker performance of sukuk issuing firms in comparison to that of bond issuing counterparts generally persists in all the industry sectors though levels of the statistical significance vary.

Let us now check if the study results vary across different firm sizes such large, medium, and small. Findings in Panel A of Table 6 show that market valuation of sukuk firms in terms of *Tobin's Q* (Model-1) is lower than that of the bond firms for all size groups, but the difference is statistically significant at the one percent level for the large- and medium-sized firms only. The *price-earnings* results (Model-2) show that only the large sukuk firms have lower market valuation in comparison to bond firms. In consistent with the earlier findings, the corporate financial performance of the sukuk firms in three size groups are significantly lower than bond firms regarding all measures such as *return on asset*, *return on equity* and *earnings per share*. Overall, it appears that the sukuk firms irrespective of their sizes have weaker financial performance in comparison with bond firms, but the market valuation is lower only for the large and medium sized sukuk firms. The small-sized sukuk firms do not perform badly with regard to market valuation despite that they have weak financial results.

[Insert Table 6 Here]

Finally, we test the performance of sukuk and bond issuing firms during normal and financial crisis periods. This test is important because financial crisis systemically affect all firms, but we do not know if the sukuk firms perform differently from the bond firms when economy falls in crisis. We find from Panel B of Table 6 that *Tobin's Q* ratio (Model-1) of sukuk firms during the crisis period is insignificantly lower than that of the bond firms. However, the *price-earnings* results are different because the earnings of sukuk firms (Model 2) are priced significantly lower than that of the bond firms. The results of models 1 and 2 show that sukuk firms are valued significantly lower than bond firms in terms of both *Tobin's Q* and *price-earnings* ratios during normal periods. The results of Model 3 through 5 in Panel B show that sukuk firms have significantly weaker financial performance in the both crisis and normal periods and these findings are consistent for *return on asset*, *return on equity*, and *earning per share*. Therefore, we further confirm that sukuk issuing firms have weak corporate performance and low growth potential. Nonetheless, the market valuation of sukuk firms is not significantly different from the bond firms during the crisis period; this anomaly needs further study.

4.2. Probabilistic model results

Having confirmed that sukuk issuing firms have lower market valuations and weaker corporate performance in comparison to bond issuing firm, we run ivprobit regressions to examine if the deterioration of firm performance increases the probability of issuing Islamic debt instead to conventional debt. We find from Table 7 that the probit coefficient of *Tobin's Q* (Model-1) is -1.25,

which is statistically significant at the five percent level. This result implies that decrease in the market valuation of firm leads to significant increase in the probability of firms choosing Islamic debt sukuk instead of conventional debt, all else remain same. The probit coefficient for *price-earnings* ratio in Model 2 is -0.030, which is statistically significant at the one percent level. This means the probability of Islamic financing by issuing sukuk is higher when firm has lesser growth prospect and thereby the *price earnings* ratio is lower. The probit coefficients for corporate financial performances such as *return on asset* (Model-3), *return on equity* (Model-4) and *earning per share* (Model-5) are also significantly negative. These findings suggest that firms incline more toward Islamic financing method when they find it difficult to increase corporate earnings sufficiently. The negative probit coefficient for *return on asset* further implies that, given the corporate payout policy, Islamic financing is safer when firm's internal growth rate (IGR) is low due to the lower earnings relative to other firms. Likewise, the negative probit coefficient for *return on equity* also indicate firms may like to choose Islamic debt when their sustainable growth rate (SGR) is low and cannot borrow additional conventional debt without further increasing the risk of insolvency.

[Insert Table 7 Here]

4.3. Robustness analysis

4.3.1 Insolvency risk and Islamic debt use

The above regression results confirm that firms issuing sukuk are weaker than bond issuing firms in terms of market valuation and corporate financial performance. Additionally, the probit test results identify that the likelihood of issuing sukuk increases when the market valuation of firms is low and corporate performance is weak. These findings imply that the firms with consistently weaker corporate performance may lead to higher insolvency risk. It is understandable that borrowings become difficult for the firms with higher insolvency risk. In this circumstance, Islamic debts might be an alternative borrowing option for these firms because of less severe default consequences as we have analyzed before. We now empirically examine if the sukuk issuing firms have higher insolvency risk as compared to bond issuing firms. In literature, Altman Z score uses several financial ratios such as liquidity, leverage, profitability, and asset turnover to determine the bankruptcy likelihood of firms (Altman, 1968). Altman z score measures insolvency risk for the firms but it is developed for manufacturing firms only. Therefore, researchers modify the z-score to fit into the specific economic and business circumstances (Altman, 1984; Altman, 2000; Altman, 2002; Altman *et al.*, 2007; Wang & Li, 2007; Chieng, 2013; Lepetit & Strobel, 2015; Sajjan, 2016; Lapteacru, 2016; Mohsni & Otchere, 2017). In this study, we examine the insolvency risk of firms using *Z-score* that is measured as $(ROA + (Equity/Assets))/\sigma ROA$. This *Z-score* compares the return on asset (ROA) and capital buffer (equity to asset) of a firm with regard to the volatility of asset returns. The ROA based *Z-score* as defined above is different from Altman Z-score but emerging literature suggests that ROA based *Z-score* is the best

measure of insolvency risk (Bouvatier *et al.*, 2017). This is because the financial stability of a firm is fundamentally linked to the uncertainty of corporate earnings as firm valuation drifts with an unexpected drops in the earnings (Chudek *et al.*, 2011), which reduces the distance to default for a firm.

To estimate *Z-score* of a firm for the current year, we measure σROA over a period of five years that include the current year and four preceding years. In this way, we construct a panel of *Z-scores* for all sample firms for 11 years from 2006 to 2016 and run regression to test if the average *Z-score* of the sukuk issuing firms is significantly lower than that of the bond issuing firms. This robust test is important to revalidate our study hypothesis because a lower *Z-score* implies higher insolvency risk of the sukuk firms. However, following the literature we use natural logarithm of *Z-score* in the robust regressions because the simple *Z-scores* are not usually normally distributed (Houston *et al.* 2010; Mohsni & Otchere, 2018). The prior study also finds that logarithm of *Z-score* is negatively proportional to the log odds of insolvency (Lepetit & Strobel, 2015). The findings on the insolvency risk of sukuk issuing firms based on the system GMM estimates are presented in Table 8.

[Insert Table 8 Here]

The all-sample findings in Panel A of Table 8 show that the coefficient of *sukuk* dummy in terms of the logarithm of *Z score* is significantly negative for the sukuk issuing firms. It implies that the sukuk issuing firms have higher insolvency risk in comparison to the bond issuing counterparts. In the Panels B through E, we present subsample results on insolvency risk of the firms across different dimensions such as (i) cross-country, (ii) cross-industry, (iii) size groups, and (iv) crisis periods. The coefficients of the country-wise *sukuk* dummies presented in Panel-B show that the average *Z score* of the sukuk issuing firms is lower than that of the bond issuing firms in all countries except Pakistan and Turkey. Panel C results show that the average *Z score* of the sukuk issuing firms is lower than that of the bond issuing firms across all industries with a minor exception for trade-service sector. Panel D shows that the average *Z score* of sukuk firms is lower than that of the bond firms for all size groups, but the difference is insignificant for the large-sized firms. Finally, Panel E reports that the average *Z score* of sukuk firms is significantly lower than that of the bond firms during both the crisis and non-crisis periods. Overall, robust testing results reconfirm that the firms that prefer Islamic debts and issue sukuk are financially more unstable and thus exposing to higher insolvency risk as compared to the bond issuing firms. This finding is consistent across the countries, industries, firm sizes, and both good and bad economic periods.

4.3.2 Checking timing effect

In Table 7, we present probit results that suggest the likelihood of sukuk issuance would increase due to the weaker performance of sukuk issuing firms. However, the empirical analysis requires to check the timing of financing decision and that of the performance measures. Hence, we run different

probit models with the current and lagged performance variables (*Tobin's Q*, *price earnings ratio*, *return on asset*, *return on equity*, *earnings per share*) to confirm if the firms consistently perform poorly in the past years would issue sukuk instead of conventional bonds. We run two sets of robust probit tests. The first set (TEST A) use lagged performance for the past three years (t_{-1} through t_{-3}) in addition to that of the current year. The second set (TEST B) uses the average performance of firms over the last five years including that of the current year. The findings of robust probit models with lagged and average past performance are presented in Table 9.

[Insert Table 9 here]

The findings of robust probit models re-confirm that the weaker performance in the past significantly increases the probability of using Islamic debt instead of conventional borrowing from the financial market. Table 9 clearly shows the coefficients of all lagged performance variables are consistently negative and turn to become more statistically significant as time approaching the current year. Hence, the robust empirical finding is consistent with our claim that firms tend to prefer issuing sukuk once their performance becomes weaker over time. We also make efforts to understand if the poor performance of firm changes later should they use Islamic debts instead of conventional debt assets. We re-estimate the models of tables 3 and 4 by using lead performances (t_{+1} through t_{+3}) as the dependent variables instead of the current period performance (t). We find that the coefficient of Islamic dummy remains mostly significantly negative for all the lead performance up to the lead year t_{+3} . This finding suggests the use of Islamic borrowing *per se* does not help improving firm performance as operational efficiency could be the underlying factor.

4.4. Discussions

In this paper, we shed lights on the use of Islamic debts in corporate capital structure by examining the firms that issue sukuk instead of conventional bonds. This is a new academic issue that needs an intensive analysis and evidence. Sukuk as a fund-raising instrument first launched in Malaysia and currently available in 29 countries in the world. This financial asset originally introduced to mitigate the concerns of Muslim investors regarding the pure debts. However, when companies issue sukuk to global financial market for raising corporate capitals, the underlying contractual arrangements of the sukuk as opposed to bond contracts need an analysis on how the Islamic debts contracts differ from the pure debt contracts to identify the circumstance when a corporate firm may prefer Islamic debt to pure debt. Our analysis shows that indebtedness consequences of Islamic debts is relatively lighter than that of pure debts, sukuk issuers can circumvent the third-party monitoring by an external trustee and receive tax incentives to recover the additional costs for sukuk issuance. Given this analysis, we argue that the firms that are financially unstable due to consistently weaker corporate performance and lower market valuations may prefer Islamic debt to pure debt. This analysis is consistent with the view that

financially unstable firms have limited access to pure debt market because of lower creditworthiness and higher insolvency risk (Bolton and Freixas, 2000; Whited, 1992; Myers, 1977; Warner, 1977).

Based on 10 cross-country data for 15 years, we find sukuk issuing firms have significantly weaker corporate performance and lower market valuation in comparison to bond issuing companies. From probit regressions, we also find that likelihood of choosing the Islamic debt increases when firms cannot perform well in comparison to those issuing the pure debt. Therefore, the study identifies sukuk issuing firms are exposing to higher insolvency risk in comparison to the bond issuing counterparts. The results are consistent across the countries, industries, firm sizes, and economic crisis periods. We observe an anomaly in Pakistan and Turkey because the sukuk issuing firms in these two countries are not exposing to higher insolvency risk in comparison to the bond issuing firms. Similarly, the sukuk issuing firms listed under the trade and service sector are also not exposing to higher insolvency risk. The inconsistency is also observed for the large-sized sukuk issuing firms because their insolvency risk is not higher than that of the bond issuing companies.

Therefore, the overall findings of this study imply that firms with lower creditworthiness can get relatively convenient credit access through Islamic debt market because an access to pure debt market might be more difficult for these firms due to higher insolvency risk. This means Islamic debt market allows the weaker firms to circumvent the debt market barriers. Therefore, we may assume that, beyond the realm of religion matters, the Islamic debt instrument sukuk can be spread out to the wider global financial markets as a viable alternative to pure debts. On the question of Islamic or pure debts, this study provides strong evidence that the financially weaker firms having higher insolvency risk prefer Islamic debts to pure debts. Therefore, the credit rating of firms is negatively correlated with the issuance of sukuks (Grassa & Miniaoui, 2017). The findings of this study also have implications for the investors. For example, the equity investors may require an additional premium to invest in the shares of sukuk issuing companies due to higher earnings uncertainty. This implication of our finding is consistent with the evidence of common Islamic risk factor recently documented in Saudi Arabia (Merdad *et al.* 2015). Similarly, the sukuk investors being the lenders also require higher return because Islamic debt contracts are subject to risk-sharing by the sukuk investors (unlike bond investors). This is documented by earlier studies (Bacha *et al.* 2015; Rahman *et al.* 2014; Ariff *et al.* 2013; Fathurahman and Fitriati, 2013).

We provide above analysis in the context of the global sukuk market where a local company issues sukuk to the international investors. However, our results may also sustain in the context of a local market where firms issue sukuk to the domestic investors. This is because debt market barrier to the less-solvent firms is common across countries. The domestic sukuks are abundant in Malaysian market only and Shahr *et al.* (2014) find that the Malaysian bumiputra companies prefer sukuk to bond. In these firms, the majority ownership belonging to the ethnic Muslim peoples, so authors suggest that Muslim religiosity might have motivated bumiputra companies to issue sukuk instead of bond.

However, an earlier study by Marimuthu (2010) finds that these bumiputra companies perform poorly in generating sufficient returns for their shareholders and maintain high financial leverage. Klein & Weill, 2016 also find that less profitable firms issue sukuk in Malaysia. Therefore, these Malaysian studies are not inconsistent with our cross-country findings. This means the financially unstable firms prefer Islamic debt to pure debt is well evident. However, we need to take into consideration that Islamic debt could be based on partnership and non-partnership contracts that might influence firms' financing choice and investors' preferences with regard to sukuk types.

Finally, we distinguish our research with the earlier study by Minhat & Dzolkarnaini (2017), suggesting Islamic financing does benefit less profitable firms as they can borrow from local Muslim financiers who has a religious motive. Contrary to their study, we find that weaker performing and financially distressed firms borrow from the global market by issuing sukuk instead of conventional bonds - confirming that there could be different reasons (other than religious motives) such as lighter indebtedness consequence, avoidance of effective third-party monitoring, and tax advantages that might motivate the firms to use Islamic debts. We find that firms persistently perform poorly for several years before issuing sukuk, and the weaker performance later does not improve as they use Islamic debt instead of conventional debt, which is consistent with corporate finance theory that financing decision *per se* does not affect the operating performance - instead, investment decisions matters. Also, our study suggests investors would require an additional risk premium as investors would invest in the weak performing firms which is consistent with the earlier evidence that market reacts negatively to sukuk issuance before and during the crisis period (Alam *et al.*, 2013).

5. Conclusion

The Islamic debt instrument sukuk is a paradigm shift in the debt market because it mimics a conventional bond equivalent cash flows for the issuers and investors, but it does not constitute a traditional lender-borrower relationship. The invention of sukuk as an alternative to the conventional debt emerges mainly from Muslim investors' concern regarding conventional borrowing involving a fixed interest. The dramatic growth of sukuk issuance in many countries of the world incites us to think if there is a genuine reason (without regard to the religiosity issue) for a firm to choose the sukuk over the conventional bond due to the innate features of sukuk instrument. Our analysis shows that the use of sukuk has lesser indebtedness consequence in terms of default resolutions and penalties, advantage of avoiding external/third-party trustee monitoring of the debt indentures, and tax incentives to recover additional issuing costs. Therefore, we hypothesize that the firms with weaker performance and lower credit strength would prefer to use Islamic debt to conventional debt and approach sukuk market instead of bond market. Using a cross-country sample of 346 firms issuing dollar-denominated sukuk and bonds to the global investors, we find that firms that use sukuk instead of bonds to raise debt capitals have lower performance in terms of both the market valuations and corporate financial results. We identify based on probit analysis that the likelihood of using sukuk instead of bonds increases with the

deterioration of firm performance and robust tests confirm that sukuk using firms have higher insolvency risk as compared to that of the bond using companies. These findings are consistent across different dimensions such as cross-country, cross-industry, size groups, and crisis periods.

Therefore, we conclude that Islamic debt market provides an alternative channel of debt financing for the firms with lower creditworthiness who might have difficulties to approach the conventional debt market. Hence, an important implication of our finding is that sukuk market might support the firms with higher insolvency risk to circumvent the debt market barriers by using Islamic debt instead of conventional debts. Therefore, the sukuk as a fund-raising instrument has good potentials to occupy space in the wider financial markets globally notwithstanding its religious origin. In addition, following the view of risk-return trade-off, the investors might need an additional premium to invest in the firms using Islamic debt capital rather than the conventional debt due to the higher risk. Overall, this study enhances our knowledge on the role of Islamic system of debt financing within the realm of financial market and corporate finance.

References:

- Abedifar, P., Molyneux, P., & Tarazi, A. (2013). Risk in Islamic banking. *Review of Finance*, 17(6), 2035-2096.
- Adam, N. J., & Thomas, A. S. (2004). *Islamic Bonds: Your guide to issuing, structuring and investing in Sukuk*. Euromoney Books.
- Afshar, T. A. (2013). Compare and contrast *Sukuk* (Islamic Bonds) with conventional bonds, Are they compatible? *The Journal of Global Business Management*, 9(1), 44–52.
- Ahmad, A. U. F., & Hassan, M. K. (2007). Riba and Islamic banking. *Journal of Islamic Economics, Banking and Finance*, 3(1), 1-33.
- Ahmad, W., & Radzi, R. M. (2011). Sustainability of Sukuk and Conventional Bond during Financial Crisis: Malaysia's Capital Market. *Global Economy and Finance Journal*, 4(2), 33-45.
- Ahmad, N., & Rahim, S. A. (2013). Sukuk Ijarah vs. Sukuk Musyarakah: Investigating Post-Crisis Stock Market Reactions. *International Journal of Humanities and Management Sciences (IJHMS)*, 1(1), 87-91.
- Ahmed, E. R., Islam, M. A., & Alabdullah, T. T. Y. (2014). Islamic Sukuk: Pricing Mechanism and Rating. *Journal of Asian Scientific Research*, 4(11), 640-658.
- Alam, N., Hassan, M. K., & Haque, M. A. (2013). Are Islamic bonds different from conventional bonds? International evidence from capital market tests. *Borsa Istanbul Review*, 13(3), 22-29.
- Alshamrani, A. (2014). Critical Evaluation of the Regulatory Framework for the Application of Islamic Financial Derivatives in the Kingdom of Saudi Arabia. *Journal of Islamic Banking and Finance*, 2 (1), 269-303.
- Al-sayyed, N. (2010). The uses and misuses of commodity murabaha: Islamic Economic Perspective, *MPRA Paper No. 20262*.

- Alswaidan, M. W. (2017). *An investigation of Sukuk structure risk* (Doctoral dissertation, University of Portsmouth).
- Altman, E. (1968). Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. *The Journal of Finance*, 23(4), p.589.
- Altman, E. I. (1984). The success of business failure prediction models: An international survey. *Journal of Banking & Finance*, 8(2), 171-198.
- Altman, E. I. (2000). *Predicting financial distress of companies: revisiting the Z-score and ZETA models*. Stern School of Business, New York University, 9-12.
- Altman, E. I. (2002). Corporate Distress Prediction Models in a Turbulent Economic and Basel II Environment, Available at: <https://archive.nyu.edu/jspui/bitstream/2451/26762/2/S-CDM-02-11.pdf>.
- Altman, E. I., Zhang, L., & Yen, J. (2007). Corporate financial distress diagnosis in China. New York University Salomon Center, *Working Paper*.
- Amuzu, M. S. (2010). Cash flow ratio as a measure of performance of listed companies in emerging economies: The Ghana example. *Unpublished PhD dissertation*. Retrieved from <http://stclements.edu/grad/gradmaxw>.
- Ariff, M., Safari, M., & Mohamed, S. (2013). Sukuk Securities and Conventional Bonds: Evidence of Significant Differences. *Social Sciences & Humanities*, 21 (2), 621 – 638.
- Ayaydin, H., & Hayaloglu, P. (2014). The effect of corruption on firm growth: evidence from firms in Turkey. *Asian Economic and Financial Review*, 4(5), 607-624.
- Ayub, M. (2009). *Understanding Islamic Finance* (Vol. 462). John Wiley & Sons..
- Azmat, S., Skully, M., & Brown, K. (2014). The Shariah compliance challenge in Islamic bond markets. *Pacific-Basin Finance Journal*, 28, 47-57.
- Bacha, O. I., Mirakhor, A., & Askari, H. (2015). Risk sharing in corporate and public finance: the contribution of Islamic finance. *PSL Quarterly Review*, 68 (274), 187-213.
- Bank Nagara Malaysia (2016) *Hibah: Concept Paper*; BNM/RH/CP 028-17; available at: https://islamicbankers.files.wordpress.com/2013/12/cp_hibah.pdf.
- Banz, R. W. (1981). The relationship between return and market value of common stocks. *Journal of financial economics*, 9(1), 3-18.
- Bazzana, F. (2014). Bondholder's Trustee. In A. Marciano, & G. B. Ramello, *Encyclopedia of Law and Economics*. New York: Springer. doi:https://doi.org/10.1007/978-1-4614-7883-6_78-1.
- Beck, T., Demirguc-Kunt, A., & Merrouche, O. (2013). Islamic vs. conventional banking model: Business model, efficiency and stability. *Journal of Banking & Finance*, 37(2), 433-447.
- Black, F. (1972). Capital market equilibrium with restricted borrowing. *The journal of business*, 45(3), 444-455.
- Bognárová, K. J. (2016). Application of cash flow return on investment in terms of financial performance measurement. *Challenges of the Knowledge Society*, 784-789.
- Bolton, P., & Freixas, X. (2000). Equity, bonds, and bank debt: Capital structure and financial market equilibrium under asymmetric information. *Journal of Political Economy*, 108(2), 324-351.
- BondAdvisor. (2017). *Understanding Bond Trustees*. Melbourne: BondAdvisor Pty Ltd. Retrieved from <http://www.bondadviser.com.au/blog/understanding-bond-trustees/>.
- Boubakri, N., Cosset, J. C., & Saffar, W. (2013). The role of state and foreign owners in corporate risk-taking: Evidence from privatization. *Journal of Financial Economics*, 108(3), 641-658.

- Bouvatier, V., Lepetit, L., Rehault, P. N., & Strobel, F. (2017). Bank insolvency risk and Z-score measures: caveats and best practice. Working paper.
Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2892672
- Boyd, J. H., Levine, R., & Smith, B. D. (2001). The impact of inflation on financial sector performance. *Journal of monetary Economics*, 47(2), 221-248.
- Canback, S.; P. Samouel; and D. Price. (2006). Do Diseconomies of Scale Impact Firm Size and Performance? A Theoretical and Empirical Overview. *Journal of Managerial Economics*, 4(1), 27-70.
- Chance, C. (2014) A guide to doing business in the Kingdom of Saudi Arabia,
<https://financialmarketstoolkit.cliffordchance.com/.../guides/doing-business-in-the-kin>.
- Chang, J. (2009) Incentives from the Malaysian Government, Islamic Venture Capital & Private Equity Conference 2009, available www.assaif.org/content/download/3046/18281/file.
- Chieng, J. (2013). *Verifying the Validity of Altman's Z" Score as a Predictor of Bank Failures in the Case of the Eurozone* (Doctoral dissertation, Dublin, National College of Ireland).
- Chong, B. S., & Liu, M. H. (2009). Islamic banking: interest-free or interest-based?. *Pacific-Basin Finance Journal*, 17(1), 125-144.
- Chu, A. C., Cozzi, G., Furukawa, Y., & Liao, C. H. (2017). Inflation and economic growth in a Schumpeterian model with endogenous entry of heterogeneous firms. *European Economic Review*, 98, 392-409.
- Chudek, M., Truong, C., & Veeraraghavan, M. (2011). Is trading on earnings surprises a profitable strategy? Canadian evidence. *Journal of International Financial Markets, Institutions and Money*, 21(5), 832-850.
- Cowling, B. and Alarifi, S. (2012) Tax Incentives In The Kingdom Of Saudi Arabia,
<http://www.mondaq.com/saudi-arabia/x/186196/tax+authorities/Tax+Incentives+In+The+Kingdom+Of+Saudi+Arabia>.
- Delen, D., Kuzey, C., & Uyar, A. (2013). Measuring firm performance using financial ratios: A decision tree approach. *Expert Systems with Applications*, 40(10), 3970-3983.
- De Fiore, F., & Uhlig, H. (2011). Bank finance versus bond finance. *Journal of Money, Credit and Banking*, 43(7), 1399-1421.
- Dubai (2018) *Tax Advantage*, Available at: <https://www.visitdubai.com/en/business-in-dubai/grow-your-business/dynamic-dubai/doing-business-in-dubai-tax-advantage>.
- Eggoh, J. C., & Khan, M. (2014). On the nonlinear relationship between inflation and economic growth. *Research in Economics*, 68(2), 133-143.
- Farooq, M., & Zaheer, S. (2015). Are Islamic banks more resilient during financial panics?. *Pacific Economic Review*, 20(1), 101-124.
- Fathurahman, H., & Fitriati, R. (2013). Comparative Analysis of Return on Sukuk and Conventional Bonds. *American Journal of Economics*, 3(3), 159-163.
- Fernendaz, P. (2006). Cashflow is cash and a fact: net income is just an opinion, *working paper no.629*.
- Ghosh, S. (2008). Leverage, Foreign Borrowing and Corporate Performance: Firm-Level Evidence for India. *Applied Economics Letters*, 15(8), 607-616.
- Godlewski, C. J., Turk-Ariss, R., & Weill, L. (2016). Do the type of sukuk and choice of shari'ah scholar matter? *Journal of Economic Behaviour & Organization*, 1-30.

- Godlewski, C., Turk-Ariss, R., & Weill, L. (2010). *Are Sukuk Really Special? Evidence from the Malaysian Stock Exchange*, working paper series no. 2010-05, University of Strasbourg – France.
- Goldschmidt, R. G. B., Brito, L. A. L., & de Vasconcelos, F. C. (2011). Country effect on firm performance: A multilevel approach. *Journal of Business Research*, 64 (3), 273-279.
- González, V.M. (2013). Leverage and Corporate Performance: International Evidence. *International Review of Economics & Finance*, 25: 169–184.
- Grassa, R., & Miniaoui, H. (2017). Corporate choice between conventional bond and sukuk issuance evidence from GCC countries. *Research in International Business and Finance*. Article in press.
- Hassan, M. K., Kayed, R. N. & Oseni, U. A. (2013). *Introduction to Islamic Banking & Finance: Principles and Practice*, 1st edi., Pearson Education Limited.
- Hegazy, W. (1999) Islamic Finance in Malaysia: A Tax Perspective, Proceedings of the Second Harvard University Forum on Islamic Finance: Islamic Finance into the 21st Century Cambridge, Massachusetts. Center for Middle Eastern Studies, Harvard University. 1999. pp.215-224.
- Houston, J. F., Lin, C., Lin, P., & Ma, Y. (2010). Creditor rights, information sharing, and bank risk taking. *Journal of Financial Economics*, 96(3), 485-512.
- IIFM. (2018). *SUKUK REPORT: A Comparative Study on Global Sukuk Market*. Manama: International Islamic Financial Market. Available at <http://www.iifm.net> (accessed: April, 2018).
- Indonesia-Investments (2018), available at :<https://www.indonesia-investments.com/tag/item31?tag=163>.
- International Capital Market Association (ICMA, 2016) *Social bonds-guidance for issuers*, available at: https://www.icmagroup.org/assets/.../Green-Bonds/SBG_June-2016_Final-160616.pdf.
- International Shari'ah Research Academy for Islamic Finance (ISRA 2015). *Islamic Capital Markets: Principles & Practices*, Pearson Malaysia Sdn Bhd, ISBN 978-976-349-652-5.
- InterNations (2018) Working in Kuwait, <https://www.internations.org/kuwait-expats/guide/working-in-kuwait-15491>.
- Ishak, I., Nasir, S. N. M. A., Ismail, N., & Hashim, S. L. M. (2017) The effect of financial ratio and GDP towards company performance in trading and services sector, *Journal of Humanities, Language, Culture and Business*, 1 (4), 163-169.
- Islamibanker (2018) Taxation of sukuk in Turkey, available at- <https://islamicbanker.com/publications/taxation-of-sukuk-in-turkey>.
- Jobst, A., Kunzel, P., Mills, P., & Sy, A. (2008). Islamic bond issuance: what sovereign debt managers need to know. *International Journal of Islamic and Middle Eastern Finance and Management*, 1(4), 330-344.
- Kaplan, S. N., & Zingales, L. (1997). Do investment-cash flow sensitivities provide useful measures of financing constraints? *The quarterly journal of economics*, 112(1), 169-215.
- Kern, D. (2015) Doing Business in the Kingdom of Saudi Arabia: A tax and legal guide; <https://www.pwc.de/de/.../doing-business-in-kingdom-of-saudi-arabia-2015.pdf>.
- Kim, H. T., Papanastassiou, M., & Nguyen, Q. (2017). Multinationals and the impact of corruption on financial derivatives use and firm value: Evidence from East Asia. *Journal of Multinational Financial Management*, 39, 39-59.
- Kim, D. H., Lin, S. C., & Chen, T. C. (2016). Financial structure, firm size and industry growth. *International Review of Economics & Finance*, 41, 23-39.

- Klein, P. O., & Weill, L. (2016). Why do companies issue sukuk? *Review of Financial Economics*, 31(1), 26-33.
- Krasicka, M. O., & Nowak, S. (2012). *What's in it for Me? A Primer on Differences between Islamic and Conventional Finance in Malaysia* (No. 12-151). International Monetary Fund.
- Kumar, M. N., & Rao, V. S. H. (2015). A new methodology for estimating internal credit risk and bankruptcy prediction under Basel II Regime. *Computational Economics*, 46(1), 83-102.
- Kyire, L., He, Z., Owusu, A., and Junaid, D. (2016) Religious Impact on the Performance of Entrepreneurs: A Comparative Study of Male and Female in Sub-Saharan Africa, *European Journal of Business and Management*, 8 (35), 85-91.
- Lapteacru, I. (2016). On the consistency of the Z-score to measure the bank risk. *Working Paper*. Available at: <https://hal.archives-ouvertes.fr/hal-01301846/document>.
- Lee, Y. N. (December, 2017). *Islamic finance is becoming so attractive that even non-Muslims want in*. CNBC. Retrieved from: <https://www.cnbc.com/2017/12/19/sukuk-islamic-finance-grows-in-non-muslim-countries.html>.
- Lepetit, L., & Strobel, F. (2015). Bank insolvency risk and Z-score measures: A refinement. *Finance Research Letters*, 13, 214-224.
- Lewis, M. K. (2008). In what ways does Islamic banking differ from conventional finance. *Journal of Islamic Economics, Banking and Finance (JIEBF)*, 4(3), 9-24.
- Li, X., Tripe, D. W., & Malone, C. B. (2017). *Measuring bank risk: An exploration of z-score*. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2823946.
- Linter, J. (1965) The Valuation of Risk Assets and Selection of Risky Investments in Stock Portfolio and Capital Budgets. *Review of Economics and Statistics*, 47(5), pp.13-47.
- Lapteacru, I. (2016). *On the consistency of the Z-score to measure the bank risk*, Also available at: <https://ideas.repec.org/p/hal/wpaper/hal-01301846.html>.
- Loderer, C. F., and Waelchli, U. (2010) *Firm Age and Performance*. MRPA Working paper, University of Berne-Institute for Financial Management; Available at: https://mpr.ub.unimuenchen.de/26450/1/MPRA_paper_26450.pdf.
- Majid, H. A. and Kamarudin, M. F. (2009) Innovation in Structuring Sukuk: Malaysian Perspective. *WIEF, 2009: Products Innovation in Islamic Finance - EKONIS UKM*, 27-37.
- Majumdar, S. K. (1997). The impact of size and age on firm-level performance: some evidence from India. *Review of industrial organization*, 12(2), 231-241.
- Malaysian Institute of Accountants (2012) *Tax Treatment on Islamic Finance in Malaysia*, available-http://www.mia.org.my/v1/downloads/technical/research/publications/MIA_Tax_Treatment_on_Islamic_Finance.pdf.
- Malkawi, B. H. (2014). A Bright Future: Towards an Enhanced Shariah Supervision in Islamic Finance, *The European Financial Review*, Available at: <http://www.europeanfinancialreview.com/?p=487>.
- Marimuthu, M. (2010). Bumiputera-controlled companies: Performance evaluation using a non-parametric approach. *International Journal of Economics and Finance*, 2(2), 178.
- Maurer, B. (2010). Form versus substance: AAOIFI projects and Islamic fundamentals in the case of sukuk. *Journal of Islamic Accounting and Business Research*, 1(1), 32-41.
- McNamara, R., & Duncan, K. (1995). Firm performance and macro-economic variables. Discussion paper no-9, Bond University, Australia. Available at: <http://epublications.bond.edu.au/cgi/viewcontent.cgi?article=1061&context=discussionpaper>.
- Merdad, H. J., Hassan, M. K., & Hippler, W. J. (2015). The Islamic risk factor in expected stock returns: an empirical study in Saudi Arabia. *Pacific-Basin Finance Journal*, 34, 293-314.

- Minhat, M. and Dzolkarnaini, N. (2017). Which firms use Islamic financing? *Economic Letters*, 150, 15-17.
- Moody's Investors Service (July, 2017) Saudi Arabia's Local Sukuk Issuance Is Credit Positive for Islamic Banks; available at: <http://www.sukuk.com/wp-content/uploads/2017/07/Moodys-KSA-local-Sukuk-Issuance-Sector-Comment-pub-27-July.pdf>.
- Mohammed, N. (2014) How Sukuk and Bond defaults differ – The role of the Trustee and the Purchase undertaking agreement, available at: <https://www.sukuk.com/education/sukuk-bond-defaults-differ-role-trustee-purchase-undertaking-agreement-1522/>.
- Mohamed, H. H., Masih, M., & Bacha, O. I. (2015). Why do issuers issue Sukuk or conventional bond? Evidence from Malaysian listed firms using partial adjustment models. *Pacific-Basin Finance Journal*, 34, 233-252.
- Mohsni, S., & Otchere, I. (2018). Does regulatory regime matter for bank risk taking? A comparative analysis of US and Canada. *Journal of International Financial Markets, Institutions and Money*, 53 (1), 1-16.
- Mollah, S., & Zaman, M. (2015). Shari'ah supervision, corporate governance and performance: Conventional vs. Islamic banks. *Journal of Banking & Finance*, 58, 418-435.
- Mossin, J. (1966) Equilibrium in a Capital Asset Pricing Market. *Econometrica*, 34, 768–83.
- Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of financial economics*, 5(2), 147-175.
- Nagano, M. (2017). Sukuk issuance and information asymmetry: Why do firms issue sukuk? *Pacific-Basin Finance Journal*, 42, 142-157.
- Nagano, M. (2016). Who issues Sukuk and when? An analysis of the determinants of Islamic bond issuance. *Review of Financial Economics*, 31(1), 45-55.
- Nagano, M. (2010). Islamic finance and the theory of capital structure. *MPRA working paper*, Available at: <https://mpra.ub.uni-muenchen.de/24567/>.
- Nakpodia, F., Shrivies, P., & Sorour, K. (2017). Examining the link between religion and corporate governance: insights from Nigeria. *Business & Society*, available at: journals.sagepub.com/doi/abs/10.1177/0007650317745852.
- National Bank of Pakistan (2013) Pakistan Investment Bond-An Investors Guide; available at : www.sbp.org.pk/dmmd/Guidelines/PIB.pdf.
- National Bonds Corporation PJSC (January 2008) Issue of National Bonds; available at- https://www.nationalbonds.ae/docs/default-source/default-document-library/nbcprospectusenglish21b80699ca2f6f76bc2cff00005d5b89.pdf?sfvrsn=d1416a66_8.
- Önder, Y. K. (2016). Asset backed contracts and sovereign risk. *Journal of Economic Behavior & Organization*, 132, 237-252.
- Opler, T. C., & Titman, S. (1994). Financial distress and corporate performance. *The Journal of Finance*, 49(3), 1015-1040.
- Othman, Z., & Kamarudzaman, A. S. (2012). The great Syariah debate. *RAM Bulletin: Sukuk Focus*, April-June, 2012.
- Oxford Business Group (2018) *Bahrain's industrial zones offer a range of investment incentives*; <https://oxfordbusinessgroup.com/analysis/bahrain%E2%80%99s-industrial-zones-offer-range-investment-incentives>.
- Pervan, M., Pervan, I., & Ćurak, M. (2017). The Influence of Age on Firm Performance: Evidence from the Croatian Food Industry. *Journal of Eastern Europe Research in Business and Economics*, DOI: 10.5171/2017. 618681.

- Pervan, M., & Višić, J. (2012). Influence of firm size on its business success. *Croatian Operational Research Review*, 3(1), 213-223.
- PricewaterhouseCoopers (2015) Doing Business in Turke; available at-
https://www.pwc.com.tr/tr/publications/.../pdf/doing_business_in_turkey_-_dusuk.pdf.
- PWC (2018) Corporate - Tax credits and incentive, <http://taxsummaries.pwc.com/ID/Indonesia-Corporate-Tax-credits-and-incentives>.
- Qatar Ministry of Foreign Affairs (2018) Investment Incentives,
<https://mofa.gov.qa/en/qatar/economy-today/investment-incentives>.
- Ramasamy, B.; D. Ong; and M.C.H. Yeung (2005) Firm Size, Ownership and Performance in the Malaysian Palm Oil Industry. *Asian Academy of Management Journal of Accounting and Finance*, 1, 81-104.
- Rahman, A. A., Abdul Latif, R., Muda, R., & Abdullah, M. A. (2014). Failure and potential of profit-loss sharing contracts. *Pacific Basin Finance Journal*, 28, 136-151.
- Saad, A. A., Ibrahim, U. B., & Napiyah, M. D. M. (2016). Murabahah Sukuk Structure: The Shariah Challenges And The Way Forward. *European Journal of Islamic Finance*, 4.
- Safari, M. (2013). Contractual structures and payoff patterns of Sukuk securities. *International Journal of Banking and Finance*, 10 (2), 67-93.
- Sajjan, R. (2016). Predicting bankruptcy of selected firms by applying Altman's z-score model. *International Journal of Research*. 4(4), 152-158.
- Securities Commission Malaysia (2009) *Sukuk: Islamic Capital Market Series*, Sweet & Maxwell Asia, ISBN 978-967-5040-39-9.
- Securities Commission Malaysia (2011) *Guidelines on the issuance of private debt securities and sukuk to retail investors*, available at:
https://www.sc.com.my/wpcontent/uploads/eng/html/resources/guidelines/bondmkt/guidelines_retailsPDS_sukuk_150615.pdf.
- Securities Commission Malaysia (2016) *Resolution of the Shari'ah Advisory Council*, Available at:
https://www.sc.com.my/wp-content/uploads/eng/html/icm/Resolution_SAC_2016.pdf.
- Seifert, B., & Gonenc, H. (2018). The effects of country and firm-level governance on cash management. *Journal of International Financial Markets, Institutions and Money*, 52, 1-16.
- Shahar, H. B. K., Ibrahim, Y., & Mohd, K. M. T. (2014.a). Firms' issuing choice between Islamic and conventional debt: does corporate governance structure matter. *Prosiding Persidangan Kebangsaan Ekonomi Malaysia ke-9*, 17-19.
- Shahida, S., & Sapiyi, S. (2013). Why do firms issue sukuk over bonds? Malaysian evidence. *Prosiding Perkem VIII, Jilid 2*, 551 - 573.
- Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *The journal of finance*, 19(3), 425-442.
- Stiroh, K. J. (2004). Do community banks benefit from diversification? *Journal of Financial Services Research*, 25(2-3), 135-160.
- Trad, S., & Bhuyan, R. (2015). Prospect of Sukuk in the Fixed Income Market: A Case Study on Kuwait Financial Market. *International Journal of Financial Research*, 6(4), 175-186.
- Uddin, M. H. (2016). Effect of government share ownership on corporate risk taking: Case of the United Arab Emirates. *Research in International Business and Finance*, 36, 322-339.
- Uddin, M. H., Hossain, M.S., & Kabir, S. H. (2017) Common Risk Factors in the Return on Sukuk Investment (*Working Paper*); *The British Accounting and Finance Association (BAFA) Conference 2018*, Central Hall Westminster, London, United Kingdom, 10-11th April, 2018.

- Vithessonthi, C., & Tongurai, J. (2015). The effect of leverage on performance: Domestically-oriented versus internationally-oriented firms. *Research in International Business and Finance*, 34, 265-280.
- Wahab, A. A. O. A., Aziz, M. R. A., Abuzraida, O. A., Al Sanousi, A. M., Al Hinai, A. R. H., & Ibrahim, A. (2014). A comparative study of Islamic financial system and conventional financial system. *Global Business and Economics Research Journal*, 3(5), 15-29.
- Wang, Z., & Li, H. (2007). Financial distress prediction of Chinese listed companies: A rough set methodology. *Chinese Management Studies*, 1(2), 93-110.
- Warner, J. B. (1977). Bankruptcy, absolute priority, and the pricing of risky debt claims. *Journal of Financial Economics*, 4(3), 239-276.
- Whited, T. M. (1992). Debt, liquidity constraints, and corporate investment: Evidence from panel data. *The Journal of Finance*, 47(4), 1425-1460.

Table 1: Sample Distribution of Sukuk Issuing Firm (SIF) and Bond Issuing Firm (BIF)

Panel A: Country Distribution			Panel B: Industry Distribution		
Country	SIF	BIF	Industry sector	SIF	BIF
Bahrain	5	19	Bank	22	49
Egypt	3	23	Trade-service	11	44
Kuwait	13	20	Technology	4	22
Malaysia	15	52	Construction	5	7
Oman	3	36	Mining	2	26
Pakistan	2	24	Industrial product	2	34
Qatar	4	20	Consumer product	2	43
Saudi Arabia	5	31	Finance	5	32
Turkey	2	26	Property	7	26
UAE	9	34	Plantation	1	2
Total	61	285	Total	61	285

Panels A and B respectively show the distribution of sample across different countries and industries areas over 2002-2016 period.

Table 2: Descriptive Statistics of Test Variables

Variable	1. All Firms (N=346)					2. Sukuk Issuing Firms (N=61)				3. Bond Issuing Firms (N=285)				4. Difference (2-3)	
	Obs.	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Diff.	t-Stat
<i>Tobin's Q</i>	3774	0.75	1.07	.0005	14.42	0.504	0.65	0.014	7.27	0.808	1.14	0.0005	14.44	-.304***	-9.45
<i>Price earning</i>	3209	23.39	50.9	0.15	875.9	22.98	38.07	1.14	295.6	23.49	53.37	0.15	875.9	-.504	-0.26
<i>Return on asset</i>	4226	0.043	0.11	-2.28	0.72	0.024	0.073	-.61	0.48	0.047	0.11	-2.28	0.71	-.024***	-7.32
<i>Return on equity</i>	3861	0.08	2.10	-115	28.06	0.019	1.50	-40.95	8.43	0.0956	2.23	-115	28.06	-.075	-1.14
<i>Earnings per share</i>	3628	0.25	1.30	-54.0	35.16	0.203	0.468	-.89	2.89	0.267	1.40	-54.0	35.1	-.064**	-2.01
<i>Size</i>	3834	2.55	1.01	0.01	5.53	2.70	0.812	0.01	4.81	2.49	1.04	1.37	5.53	0.21	0.71
<i>Leverage</i>	3558	0.79	0.59	-5.43	13.17	0.808	0.476	-1.65	6.44	0.787	0.62	-5.43	13.1	0.021	1.13
<i>Age</i>	5190	34.91	22.1	3	190	28.7	19.01	4	113	36.24	22.48	3	190	-7.54***	-11.7
<i>Free cash flow</i>	4078	.0043	1.70	-53.0	26.8	.084	0.43	3.66	4.31	-0.008	1.82	-53.0	26.8	0.093**	2.58
<i>Asset turnover</i>	3070	.734	2.85	-.23	88.17	0.26	0.31	-.06	2.26	.806	3.05	-.23	88.17	-.545***	-8.9
<i>Profit margin</i>	2770	-.024	14.3	-606.9	271.3	1.16	16.1	-55.3	271.3	-.22	13.97	-606.9	205.1	1.38	1.62
<i>Cost to revenue</i>	2990	1.18	10.5	-153.4	501.4	0.84	4.51	-23.5	74.9	1.22	11.07	-153.4	501.4	-0.37	-1.17
<i>GDP per capita</i>	5190	4.10	0.49	2.69	4.94										
<i>Inflation</i>	4846	4.72	5.16	-4.86	44.9										
<i>Corruption</i>	4960	3.51	4.15	0.45	9.76										
<i>Muslim</i>	5190	82.7	13.1	61	99										

Tobin's Q ratio is calculated as the market value of the equity plus the book value of debts divided by the book value of total assets. *Price earnings* ratio is calculated as the market price per share divided by earning per share. *Return on asset* is calculated as the net income divided by total assets. *Return on equity* is calculated as the net income divided by total equity. *Earnings per share* is calculated as net earnings divided by total outstanding shares. *Size* is the market capitalization of the firm. *Leverage* is calculated as total debt divided by total equity. *Age* is the business firm existing years. *Free cash flow per share* is calculated as the free cash flow divided by total outstanding shares. *Asset turnover* is calculated as sales divided total assets. *Profit margin* is calculated as net income divided by revenue. *Cost to revenue* is calculated as total cost divided by total sales. *GDP per capita* is calculated as country's gross domestic product divided by its total population. *Inflation* is the rate at which prices increase over time. *Corruption* is the corruption rate of issuing countries. *Muslim* indicates the percentage of Muslim of a country. Asterisks ***, **, * denote the level of significance at respectively one, five and ten percent levels.

Table 3: Market valuation and corporate financial performance of sukuk issuing firms

Data: period 2002-2016, countries 10, industries 10, companies 346 (bond issuing 285 and sukuk issuing 61).

We test $Performance_{it} = \alpha + \beta Sukuk_{it} + \varepsilon_{it}$ where market performance is determined by *Tobin's Q* and *Price earnings* ratio, while corporate financial performance is estimated by *Return on asset*, *Return on equity* and *Earnings per share*; *Sukuk*=1 if firm issues sukuk and ε is the error term. We estimate the model based on the system GMM that controls for the endogeneity bias and provides efficient estimates.

Variable	Market valuation measures		Corporate financial performance		
	Model-1	Model-2	Model-3	Model-4	Model-5
	<i>Tobin's Q</i>	<i>Price earning</i>	<i>Return on asset</i>	<i>Return on equity</i>	<i>Earnings per share</i>
<i>Sukuk</i>	-0.39*** (-7.78)	-0.044 (-0.019)	-0.029*** (-17.89)	-0.775 (-0.45)	-0.089*** (-6.72)
<i>Constant</i>	1.23*** (21.45)	6.14*** (6.87)	0.03*** (4.11)	0.056* (2.14)	0.86*** (3.08)
Wald chi-sq.	1415.7	19.15	326.07	10.98	49.54
Observation	3427	2698	3866	3540	3310

Asterisks ***, **, * denote the level of significance at respectively one, five and ten percent levels. The figures in the parenthesis show *t* values of the corresponding parameters.

Table 4: Findings on the market valuation and corporate financial performance of sukuk issuing firms based on the system GMM estimators.

We examine $Performance_{it} = \alpha + \beta Sukuk_{it} + \sum_{i=1}^n \gamma Controls_{it} + \sum_{i=1}^n \theta_i Year_{it} + \sum_{i=1}^n \theta_i Country_{it} + \sum_{i=1}^n \theta_i Industry_{it} + \varepsilon_{it}$ where market performance is determined by *Tobin's Q* and *Price earnings* ratio, while corporate financial performance is estimated by *Return on asset*, *Return on equity* and *Earnings per share*; *Sukuk*=1 if firm issues sukuk, controls includes a set of firm level and country level control variables, and finally *Year_{it}*, *Country_{it}*, and *Industry_{it}* are respectively year, country and industry dummies in the model. We estimate the model based on the system GMM that controls for the endogeneity bias and provides efficient estimates.

Variables	Market valuation measures		Corporate Financial Performance		
	Model-1 <i>Tobin's Q</i>	Model-2 <i>Price earning</i>	Model-3 <i>Return on asset</i>	Model-4 <i>Return on equity</i>	Model-5 <i>Earnings per share</i>
<i>Sukuk Dummy</i>	-1.31*** (-3.01)	-0.045*** (-3.40)	-0.279*** (-3.81)	-1.63* (-1.78)	-0.148*** (-7.70)
<i>Size</i>	-1.10*** (-10.57)	-20.58* (-1.85)	0.058*** (3.92)	0.132*** (4.38)	0.241*** (3.88)
<i>Leverage</i>	-1.348*** (-4.25)	-7.12*** (-4.18)	-0.089*** (-3.13)	-0.564* (-1.77)	-0.456* (-1.92)
<i>Age</i>	1.02 (0.67)	-0.078 (-0.76)	-0.054 (-0.86)	-0.013* (-2.11)	-0.024 (-0.77)
<i>Return on asset</i>	2.32*** (4.32)	-45.11** (-2.19)			
<i>Return on equity</i>	-0.072*** (-3.47)	-29.90*** (-4.37)			
<i>Earnings per share</i>	-0.019** (-2.32)	-2.985*** (-3.19)			
<i>Cash flow per share</i>	-0.0067 (-1.36)	-0.1174 (-0.34)			
<i>Asset Turnover</i>			1.056*** (2.33)	1.87*** (3.11)	1.06*** (2.34)
<i>Profit Margin</i>			1.34** (2.19)	1.42** (2.19)	1.62** (2.26)
<i>Cost to revenue</i>			-0.001*** (-4.31)	-0.003* (-2.08)	-0.001* (-1.91)
<i>GDP per capita</i>	-0.135* (-1.93)	7.995** (2.58)	-0.0229*** (-3.42)	-0.090** (-2.61)	-0.0172 (-0.17)
<i>Inflation</i>	-0.018* (-1.98)	-0.016 (-0.06)	-0.001 (-0.45)	-0.003 (-1.03)	0.008 (1.00)
<i>Corruption</i>	-0.109* (-1.85)	-0.032 (-1.21)	-0.101* (-1.48)	-0.171 (-1.34)	-0.262 (-0.15)
<i>Muslim</i>	0.010*** (4.38)	0.223* (2.05)	0.001*** (3.93)	0.003 (0.68)	0.004* (1.89)
<i>Year effect</i>	Yes	Yes	Yes	Yes	Yes
<i>Country effect</i>	Yes	Yes	Yes	Yes	Yes
<i>Industry effect</i>	Yes	Yes	Yes	Yes	Yes
<i>Constant</i>	0.087 (0.21)	0.343 (0.09)	0.0512 (0.26)	0.61* (1.97)	-0.754* (-1.91)
<i>Wald chi-sq.</i>	365.87	143.25	313.80	319.28	749.70
<i>Observation</i>	2332	1795	1963	2012	1846

Asterisks ***, **, * denote the level of significance respectively at the 1, 5 and 10 percent levels. The values in the parenthesis show robust *t* value. Variance Inflation Factors (VIF) are below the level of tolerance (VIF=5). In model 1 and model 2 of market value measures, we do not control *asset turnover*, *profit margin*, and *cost to revenue* due to the multicollinearity issue with the selected variables.

Table: 5 Findings on the performance of sukuk issuing firms across different countries and industries based on the system GMM estimators.

Panel A: Country variation analysis						Panel B: Industry variation analysis					
$Performance_{it} = \alpha + \sum_{i=1}^n \beta_i Sukuk_country_{it} + \sum_{i=1}^n \gamma_i Control_{it} + \sum_{i=1}^n \theta_i Year_{it} + \sum_{i=1}^n \theta_i Industry_{it} + \sum_{i=1}^n \theta_i Country_{it} + \varepsilon_{it}$ - where $\sum_{i=1}^n \beta_i Sukuk_country_{it}$ are different subsample dummies. Example, $Sukuk_Bahrain = 1$ if the observation is a Bahrain sukuk issuing firm.						$Performance_{it} = \alpha + \sum_{i=1}^n \beta_i Sukuk_industry_{it} + \sum_{i=1}^n \gamma_i Control_{it} + \sum_{i=1}^n \theta_i Year_{it} + \sum_{i=1}^n \theta_i Country_{it} + \sum_{i=1}^n \theta_i Industry_{it} + \varepsilon_{it}$ - where $\sum_{i=1}^n \beta_i Sukuk_industry_{it}$ are different subsample dummies. Example, $Sukuk_Bank = 1$ if the observation is a sukuk issuing firm from Banking sector.					
Country	Market Value Performance		Corporate Financial Performance			Industry	Market Value Performance		Corporate Financial Performance		
	Model-1 <i>Tobin's Q</i>	Model-2 <i>Price earning</i>	Model-3 <i>Return on asset</i>	Model-4 <i>Return on equity</i>	Model-5 <i>Earnings per share</i>		Model-1 <i>Tobin's Q</i>	Model-2 <i>Price earning</i>	Model-3 <i>Return on asset</i>	Model-4 <i>Return on equity</i>	Model-5 <i>Earnings per share</i>
Bahrain	-0.534** (-2.11)	1.09 (1.12)	-1.03 (-1.52)	-0.091* (-1.91)	-0.43** (-2.17)	Bank	-1.03** (-2.13)	0.875 (1.11)	-1.021** (-2.35)	-0.211* (-1.85)	-0.113* (-1.73)
Egypt	-0.619** (-2.19)	-1.21* (-1.87)	-0.107** (-2.27)	-0.321** (-2.19)	-1.63 (-0.24)	Trade-service	-0.021 (-0.21)	-1.16* (-1.89)	-0.213*** (-2.82)	-1.53 (-1.32)	-0.139*** (-2.51)
Kuwait	-0.117* (-1.98)	3.16 (0.82)	-0.435** (-2.10)	-0.43 (-1.12)	-0.428** (-2.21)	Technology	-0.081 (-1.33)	2.11 (0.74)	-0.043** (-2.21)	-0.106 (-0.96)	-0.43** (-1.78)
Malaysia	-0.321*** (-5.18)	-3.54** (-2.23)	-0.031* (-0.66)	0.021 (1.33)	-0.049** (-2.55)	Construction	-1.41** (-2.33)	-2.32 (-1.24)	-0.21*** (-3.16)	-0.451* (-1.69)	-0.878*** (-3.81)
Oman	-0.666 (-1.61)	-2.42* (-1.91)	-0.021** (-2.20)	-0.347 (-0.78)	-1.13 (-1.18)	Mining	2.11 (0.98)	1.73 (0.65)	0.424 (0.46)	-0.432** (-2.32)	0.567 (0.67)
Pakistan	-0.250* (-1.95)	-5.021** (-2.21)	-0.087** (-3.97)	-0.320** (-2.01)	-1.29** (-2.18)	Industrial product	-0.112 ** (-2.12)	0.331 (0.27)	0.349 (1.23)	1.24 (1.223)	-0.132** (-2.16)
Qatar	0.032 (1.12)	-2.40 (-1.12)	1.03 (1.12)	1.03 (1.05)	-0.231 (-1.13)	Consumer product	-0.542*** (-4.10)	-2.12 (-0.96)	-0.34*** (-3.32)	1.42 (1.421)	-1.121** (-1.91)
Saudi Aribia	-0.237* (-1.97)	-2.61 (-1.23)	-0.021* (-1.77)	1.06 (0.12)	-0.027** (-1.89)	Finance	-1.22** (-2.31)	-3.26** (-2.72)	-0.045** (-2.13)	-0.018 (-0.19)	-0.212 (-1.23)
Turkey	-0.831** (-2.59)	-1.81** (-2.09)	-0.32*** (-3.24)	-1.023 (-0.76)	-1.297** (-2.15)	Property	-1.11 ** (-1.94)	-1.15*** (-5.46)	-0.346 (-1.64)	1.224 (0.89)	-0.342*** (-4.11)
UAE	-0.542** (-2.22)	4.55 (1.19)	-0.065** (-2.24)	-0.007* (-1.89)	-1.126** (-1.98)	Plantation	-0.349 (-0.76)	-2.56*** (-2.51)	0.524 (1.32)	-0.278 (-0.91)	-0.076 (-1.12)

This table presents the coefficients of *Sukuk* dummies of the test models run across different sukuk issuing county and industry sector respectively in Panel A and Panel B. Asterisks ***, **, * denote the level of significance at respectively one, five and ten percent levels. The values in the parenthesis show *t* value. Variance Inflation Factors (VIF) are quite below the level of tolerance (*henceforth* VIF=5). We report only the relevant coefficients for managing the space.

Table: 6 Analysis on the performance of sukuk issuing firms across different sizes and crisis periods based on the system GMM estimators

Panel A: Size group analysis						Panel B: Crisis period analysis					
$Performance_{it} = \alpha + \sum_{i=1}^n \beta_i Sukuk_size_{it} + \sum_{i=1}^n \gamma_i Control_{it} + \sum_{i=1}^n \theta_i Year_{it} + \sum_{i=1}^n \theta_i Country_{it} + \sum_{i=1}^n \theta_i Industry_{it} + \varepsilon_{it}$ where $\sum_{i=1}^n \beta_i Sukuk_size_{it}$ are different subsample dummies. Example, $Sukuk_Large = 1$ if the observation is a large-sized sukuk issuing firm.						$Performance_{it} = \alpha + \sum_{i=1}^n \beta_i Sukuk_crisis_{it} + \sum_{i=1}^n \gamma_i Control_{it} + \sum_{i=1}^n \theta_i Year_{it} + \sum_{i=1}^n \theta_i Country_{it} + \sum_{i=1}^n \theta_i Industry_{it} + \varepsilon_{it}$, where $\sum_{i=1}^n \beta_i Sukuk_crisis_{it}$ are different subsample dummies. Example, $Sukuk_Crisis = 1$ if the observation indicates the crisis period performance of all sukuk issuing firms.					
Variables	Market Value Performance		Market Value Performance			Variables	Market Value Performance		Corporate Financial Performance		
	Model-1 <i>Tobin's Q</i>	Model-2 <i>Price earning</i>	Model-3 <i>Return on asset</i>	Model-4 <i>Return on equity</i>	Model-5 <i>Earnings per share</i>		Model-1 <i>Tobin's Q</i>	Model-2 <i>Price earning</i>	Model-3 <i>Return on asset</i>	Model-4 <i>Return on equity</i>	Model-5 <i>Earnings per share</i>
<i>Sukuk_Large</i>	-1.23** (-2.19)	-1.31*** (-3.79)	-0.671*** (-5.34)	-1.43** (-2.12)	-0.437** (-2.43)	<i>Sukuk- Crisis</i>	-1.345* (-1.69)	-3.45** (-1.93)	-1.34* (-1.68)	-0.567* (-1.81)	-0.567** (-2.23)
<i>Sukuk_Medium</i>	-0.457*** (-2.87)	-1.324* (-1.71)	-0.078*** (-3.12)	-0.679** (-2.02)	-0.453*** (-3.23)	<i>Sukuk-Non-crisis</i>	-0.456** (-2.17)	-2.34** (-2.04)	-0.567** (-1.94)	-0.356** (-2.21)	-0.675** (-2.13)
<i>Sukuk_Small</i>	-0.346 (-1.23)	-3.31 (-1.32)	-0.237** (-2.05)	-1.132** (-2.11)	-0.123** (-2.27)						
<i>Controls Effect</i>	YES	YES	YES	YES	YES	<i>Controls Effect</i>	YES	YES	YES	YES	YES
<i>Year effect</i>	YES	YES	YES	YES	YES	<i>Year effect</i>	YES	YES	YES	YES	YES
<i>Country effect</i>	YES	YES	YES	YES	YES	<i>Country effect</i>	YES	YES	YES	YES	YES
<i>Industry effect</i>	YES	YES	YES	YES	YES	<i>Industry effect</i>	YES	YES	YES	YES	YES
<i>Constant</i>	0.435 (0.76)	3.11 (0.98)	0.684* (2.02)	0.635** (2.01)	-0.134* (-1.72)	<i>Constant</i>	0.067 (0.27)	1.45 (0.10)	0.0412 (1.26)	0.561* (1.90)	-0.628* (-1.87)
Wald chi-sq.	134.55	153.98	251.25	390.67	193.5	Wald chi-sq.	211.5	113.9	221.80	116.8	419.76
Observations	2357	2457	2355	2314	2235	Observations	2245	2322	2312	2315	2025

The large sukuk issuing firms are those with total asset above the 75th percentile of all sukuk issuing firms and small sukuk issuing firms are those with total asset below 25th percentage, while the medium sized sukuk issuing firms are those with total assets between 25th and 75th percentiles. The crisis sukuk issuing firms indicate the corporate performance of all sukuk issuing firms during the financial crisis period 2007–2009, while non- crisis sukuk issuing firms indicate the corporate performance of all sukuk issuing firms during the non-financial crisis period. Asterisks ***, **, * denote the level of significance at respectively one, five and ten percent levels. The values in the parenthesis show *t* value. Variance Inflation Factors (VIF) are below the level of tolerance (VIF=5). We state only the relevant variable coefficients in order to save space.

Table: 7 Testing if the weak firms issue sukuk based on IVPROVIT regressions.

$Prob(Sukuk_{it} = 1|X_{it}) = \alpha + \beta'Performance_{it} + \sum_{i=1}^n \gamma Control_{it} + \sum_{i=1}^n \theta_i Year_{it} + \sum_{i=1}^n \theta_i Country_{it} + \sum_{i=1}^n \theta_i Industry_{it} + \varepsilon_{it}$. Here $Performance_{it} = \alpha + \beta'LEVERAGE_{it} + \varepsilon_{it}$ and estimated in the 1st stage regressions. In these regressions, the market value performance is determined by *Tobin's Q* and *price earnings* ratio, while the corporate financial performance is measured by *return on asset*, *return on equity* and *earnings per share*.

Variables	Market Value Performance		Corporate Financial Performance		
	Model-1	Model-2	Model-3	Model-4	Model-5
<i>Tobin's Q</i>	-1.25** (-6.28)				
<i>Price earning</i>		-0.030*** (-3.70)			
<i>Return on asset</i>			-10.16*** (-5.10)		
<i>Return on equity</i>				-0.561*** (-3.12)	
<i>Earnings per share</i>					-0.078* (-2.33)
<i>Size</i>	0.581*** (2.38)	0.245* (1.87)	0.541*** (3.31)	0.134 (1.24)	0.083* (2.12)
<i>Firm Age</i>	-0.021** (-2.31)	-0.0329 (-1.21)	-0.031* (-2.12)	-0.211* (-1.81)	-0.032** (-2.21)
<i>Inflation</i>	0.1456*** (3.12)	0.151** (2.81)	1.10*** (4.12)	0.245*** (2.61)	0.658** (1.67)
<i>GDP per capita</i>	0.7103*** (4.39)	2.228** (2.99)	0.510** (3.38)	1.096*** (4.37)	1.421*** (4.11)
<i>Corruption</i>	0.509*** (6.85)	-0.062 (-0.21)	0.510*** (7.48)	0.4783*** (3.64)	0.4762** (2.15)
<i>Muslim</i>	-0.102*** (-4.58)	-0.022** (-2.05)	-0.112*** (-4.45)	-0.022*** (-3.32)	-.214** (-2.24)
<i>Year effect</i>	YES	YES	YES	YES	YES
<i>Country effect</i>	YES	YES	YES	YES	YES
<i>Industry effect</i>	YES	YES	YES	YES	YES
<i>Constant</i>	-0.435 (-0.67)	-0.457 (-0.84)	0.321* (1.77)	-1.324 (-1.32)	-1.23 (-1.11)
<i>Wald chi square</i>	177.06	365.12	142.16	108.71	255.07
<i>Prob > chi square</i>	0.000	0.000	0.000	0.000	0.000
<i>Observation</i>	2237	1784	3233	2738	2172

Asterisks ***, **, * denote the level of significance at respectively one, five and ten percent levels. The values in the parenthesis show *t* value. The analysis includes 14 dummy variables for 15 years (Year 2002 to Year 2016) along with other control variables of the model. While testing the 2nd stage regressions, *performance* variable is replaced by the estimated values from the 1st stage regression test defined above; results of the 1st stage tests are available with authors.

Table: 8 Analysis of Z-scores of sukuk issuing firms based on the system GMM estimators

Panel A: All sample results $Z_{score_{it}} = \alpha + \beta Sukuk_{it} + \sum_{i=1}^n \gamma Controls_{it} + \sum_{i=1}^n \theta_i Year_{it} + \sum_{i=1}^n \theta_i Country_{it} + \sum_{i=1}^n \theta_i Industry_{it} + \varepsilon_{it}$		Panel B: Country-wise analysis $Z_{score_{it}} = \alpha + \sum_{i=1}^n \beta_i Sukuk_{country_{it}} + \sum_{i=1}^n \theta_i Year_{it} + \sum_{i=1}^n \theta_i Industry_{it} + \sum_{i=1}^n \theta_i Country_{it} + \varepsilon_{it}$		Panel C: Industry-wise analysis $Z_{score_{it}} = \alpha + \sum_{i=1}^n \beta_i Sukuk_{industry_{it}} + \sum_{i=1}^n \theta_i Year_{it} + \sum_{i=1}^n \theta_i Country_{it} + \sum_{i=1}^n \theta_i Industry_{it} + \varepsilon_{it}$	
Variables	Model-1	Country	Model-2	Industry	Model-3
<i>Sukuk Dummy</i>	-0.510*** (-2.79)	Bahrain	-0.189*** (-2.18)	Bank	-0.456*** (-3.19)
<i>Size</i>	1.34** (2.15)	Egypt	-0.895 (-1.23)	Trade-service	0.657*** (4.23)
<i>Leverage</i>	0.356** (3.45)	Kuwait	-0.65*** (-5.23)	Technology	-0.234** (-2.28)
<i>Age</i>	0.045 (0.76)	Malaysia	-0.87*** (-4.21)	Construction	-0.621*** (-3.60)
<i>Cash flow per share</i>	-0.051** (-2.31)	Oman	-2.10*** (-4.08)	Mining	-0.89*** (-3.55)
<i>Profit margin</i>	0.026 *** (4.94)	Pakistan	0.721** (2.21)	Industrial product	-0.326 (-1.11)
<i>GDP per capita</i>	-0.829*** (-4.46)	Qatar	-0.5613** (-2.38)	Consumer product	-0.436*** (-4.57)
<i>Inflation</i>	-0.073** (-2.18)	Saudi Aribia	-0.630* (-1.87)	Finance	-0.193 (-1.12)
<i>Corruption</i>	-1.31 (-1.21)	Turkey	0.381 (1.11)	Property	-0.568*** (-3.95)
<i>Muslim</i>	-0.567*** (-2.98)	UAE	-.312* (-1.78)	Plantation	-2.051*** (-7.41)
<i>Year effect</i>	Yes	Panel D: Size-wise analysis $Z score_{it} = \alpha + \sum_{i=1}^n \beta_i Sukuk_{size_{it}} + \sum_{i=1}^n \theta_i Year_{it} + \sum_{i=1}^n \theta_i Country_{it} + \sum_{i=1}^n \theta_i Industry_{it} + \varepsilon_{it}$		Panel E: Financial crisis analysis $Z score_{it} = \alpha + \sum_{i=1}^n \beta_i Sukuk_{crisis_{it}} + \sum_{i=1}^n \theta_i Year_{it} + \sum_{i=1}^n \theta_i Country_{it} + \sum_{i=1}^n \theta_i Industry_{it} + \varepsilon_{it}$	
<i>Country effect</i>	Yes	Size Groups	Model-4	Different Periods	Model-5
<i>Industry effect</i>	Yes	<i>Sukuk_Large</i>	1.678 (1.09)	<i>Sukuk_Crisis</i>	-1.32*** (-2.82)
<i>Constant</i>	6.23*** (3.86)	<i>Sukuk_Medium</i>	-0.567*** (-6.23)	<i>Sukuk_Non-Crisis</i>	-0.48*** (-4.31)
<i>Wald chi square</i>	673.62	<i>Sukuk_Small</i>	-0.867*** (-5.23)		
<i>Prob > chi-square</i>	0.00				
<i>Observation</i>	1432				

Z score = $(ROA + (Equity/Assets))/\sigma ROA$. We use natural logarithm of Z-score in the regressions because raw Z-scores are not usually normally distributed (Houston *et al.* 2010; Mohsni & Otchere, 2018). All other variables are same in the earlier tables. Asterisks ***, **, * denote the level of significance at respectively one, five and ten percent levels. The values in the parenthesis show *t* value. Variance Inflation Factors (VIF) are quite below the level of tolerance (*henceforth* VIF=5). In Panel A, we report complete results for all samples. In other panels, we only report the results of subsample sukuk dummies due to space constraints.

Table: 9 Timing effect analysis

TEST A: $Prob(Sukuk_{it} = 1|X_{it}) = \alpha + \sum_{t=0}^3 \beta_t Performance_{it} + \sum_{i=1}^n YControl_{it} + \sum_{i=1}^n \theta_i Year_{it} + \sum_{i=1}^n \theta_i Country_{it} + \sum_{i=1}^n \theta_i Industry_{it} + \varepsilon_{it}$.

TEST B: $Prob(Sukuk_{it} = 1|X_{it}) = \alpha + \beta Average\ performance_{it=0\ to\ -4} + \sum_{i=1}^n YControl_{it} + \sum_{i=1}^n \theta_i Year_{it} + \sum_{i=1}^n \theta_i Country_{it} + \sum_{i=1}^n \theta_i Industry_{it} + \varepsilon_{it}$.

TEST	Performance variables	<i>Prob (Sukuk_{it} = 1)</i>				
		Model-1	Model-2	Model-3	Model-4	Model-5
A	<i>Tobin's Q_{t-0}</i>	-0.35*				
	<i>Tobin's Q_{t-1}</i>	-0.01				
	<i>Tobin's Q_{t-2}</i>	-0.19				
	<i>Tobin's Q_{t-3}</i>	0.10				
B	<i>Tobin's Q average_{t=0 to -4}</i>	-0.434*				
A	<i>Price earning_{t-0}</i>		-0.007*			
	<i>Price earning_{t-1}</i>		-0.004			
	<i>Price earning_{t-2}</i>		-0.001			
	<i>Price earning_{t-3}</i>		0.005*			
B	<i>Price earning average_{t=0 to -4}</i>		-.003**			
A	<i>Return on asset_{t-0}</i>			-1.87*		
	<i>Return on asset_{t-1}</i>			-2.69*		
	<i>Return on asset_{t-2}</i>			-1.17		
	<i>Return on asset_{t-3}</i>			-0.47		
B	<i>Return on asset average_{t=0 to -4}</i>			-3.91**		
A	<i>Return on equity_{t-0}</i>				-0.81***	
	<i>Return on equity_{t-1}</i>				-0.26***	
	<i>Return on equity_{t-2}</i>				-0.27***	
	<i>Return on equity_{t-3}</i>				-0.033*	
B	<i>Return on equity average_{t=0 to -4}</i>				-1.06**	
A	<i>Earnings per share_{t-0}</i>					-0.325*
	<i>Earnings per share_{t-1}</i>					-0.082
	<i>Earnings per share_{t-2}</i>					0.064
	<i>Earnings per share_{t-3}</i>					0.016
B	<i>Earnings per share average_{t=0 to -4}</i>					-0.442**

Asterisks ***, **, * denote the level of significance of the coefficient at respectively one, five and ten percent levels. The asterisks are based on the robust *t-stats* calculated using standard errors clustered by country and year. We report asterisks (without *t-states*) only to save space in the table. For regression B, the average performance of the current and preceding four years (from *t* to *t-4*) is inputted for the current year (*t=0*). As an example, the average performance of the period from 2002 to 2006 is taken for 2006. Likewise, the average performance of the period from 2003 to 2007 is taken for 2007. We roll down this process until 2017 to construct the panel data set. All other variables are same as those in earlier tables.

Appendix 1: Tax legislations & incentives in different countries

Country	Descriptions	Sources
Malaysia	(1) Sukuk profits are taxed like conventional bond interests. (2) Tax neutrality is executed following the Income Tax Act 1967. (3) Sukuk issuers receive tax deduction on expenses incurred for sukuk; enjoy 20% duty remission on issuance of Islamic securities and get 100% stamp duty exemption on foreign currency instruments issued by International Islamic Financial Institutions. (4) Foreign sukuk investors get tax exemption on profits received from ringgit-dominated Islamic securities. (5) Profit paid on non-ringgit sukuk approved by the SCM is exempt from income tax to all investors. (6) SPV is exempted from regular tax administrative procedures and is not subject to income tax. (7) Fees up to RM 5000 per annum for approved IF courses are eligible for personal tax relief. (8) Non-resident experts in IF verified by Malaysian Islamic Finance Centre Secretariat receive income tax exemption.	Malaysian Institute of Accountants (2012); ISRA (2015 pp.388-402); Chang (2009); Hegazy (1999).
Saudi Arabia	(1) No specific tax law for Islamic finance. (2) No stamp duty. (3) 5% withholding tax is levied on non-residents in respect of profits from Islamic securities. (4) GCC nations are exempted from income tax, (5) Investors are granted a tax credit for 10 years equal to 15% of the paid-up capital of shariah approved projects whether in cash or in case of capital increase (Capital Incentive).	Kern (2015); ISRA (2015); Chance (2014); Cowling and Al-arifi (2012)
Bahrain	(1) No corporate income tax. (2) No withholding tax. (3) Provides added benefits for foreign investors, including contracts protecting tenants against future tax changes; (4) Offers companies with certain exemptions from paying import duties.	Oxford Business Group (2018); Kern (2015); ISRA (2015);
UAE	(1) Does not impose federal corporate tax. (2) No withholding duty (3) No stamp duty. (4) Low customs duties at 4% with necessary exemptions; (5) There are no foreign exchange controls, trade quotas or barriers.	Dubai (2018); Kern (2015)
Turkey	(1) Sukuk profits are taxed at the same rates as conventional bonds. (2) Imposes tax neutrality policies, (3) No withholding duty. (4) Stamp tax will no longer be imposed on documents prepared in connection with the sale of the asset by originator.	Pricewaterhouse-Coopers (2015); Islamibanker (2015).
Qatar	(1) Transactions within the Qatar Financial Centre (QFC) are taxed similar to conventional finance alternatives. (2) No stamp duty. (3) Import tax exemption on heavy duty machinery and raw materials, (4) GCC nations are exempted from tax treatment.	Kern (2016); Qatar Ministry of Foreign Affairs (2018)
Kuwait	(1) There is no specific tax laws for Islamic finance. (2) No stamp duty. (3) No personal taxes, not even for expats working in Kuwait. (4) GCC countries are exempted from tax.	Kern (2015); Inter-Nations (2018); ISRA (2015)
Indonesia	(1) Income tax facilities similar to Shari'ah investment incentives under the income tax concessions. (2) Non-collection of VAT and LST on importing certain goods. (3) Postponement of import duty on capital goods and equipment. (4) Non-collection of VAT and LST on the domestic purchases of certain goods. (5) Indonesian government also offers various attractive incentives to investors, such as tax holidays and tax allowances.	PWC (2018); Indonesia-investment (2018)

This table provides an overview of tax legislations and tax incentives across different sukuk issuing countries around the globe.